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THE NATURAL PHILOSOPHY OF LOVE

This One

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THE NATURAL PHILOSOPHY OF LOVE

BY

REMY DE GOURMONT

Translated with a Postscript By

EZRA POUND

BONI AND LIVERIGHT

Publishers New York

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THE NATURAL PHILOSOPHY OF LOVE

CHAPTER I

THE SUBJECT OF AN IDEA

Love's general psychology.—Love according to natural laws.—Sexual selection.—Man's place in Nature.—Identity of human and animal psychology.—The animal nature of love.

THIS book, which is only an essay, because its subject matter is so immense, represents, nevertheless, an ambition: one wanted to enlarge the general psychology of love, starting it in the very beginning of male and female activity, and giving man's sexual life its place in the one plan of universal sexuality.

Certain moralists have, undeniably, pretended to talk about "love in relation to natural causes," but they were profoundly ignorant of these natural causes: thus Sénancour, whose book, blotted though it be with ideology, remains the boldest work on a subject so essential that nothing can drag it to triviality. If Sénancour had been acquainted with the science of his time, if he had only read Réaumur and Bonnet, Buffon and Lamarck; if he

had been able to merge the two ideas, man and animal into one, he, being a man without insurmountable prejudices, might have produced a still readable book. The moment would have been favorable. People were beginning to have some exact knowledge of animals' habits. Bonnet had proved the startling relationships of animal and vegetable reproduction; the essential principle of physiology had been found; the science of life was brief enough to be clear; one might have ventured a theory as to the psychological unity of the animal series.

Such a work would have prevented numerous follies in the century then beginning. One would have become accustomed to consider human love as one form of numberless forms, and not perhaps, the most remarkable of the lot, a form which clothes the universal instinct of reproduction; and its apparent anomalies would have found a normal explanation amid Nature's extravagance. Darwin arrived, inaugurated a useful system, but his views were too systematized, his aim too explanatory and his scale of creatures with man at the summit, as the culmination of universal effort, is of a too theologic simplicity. Man is not the culmination of nature, he is *in Nature,* he is *one* of the unities of life, that is all. He is the product of a partial, not of total evolution; the branch whereon he blossoms, parts like a thousand other branches from a common trunk. Moreover, Darwin, truckling to the religiose pudibundery of his race, has almost wholly neglected the actual facts of sex; this makes his theory of sexual selection, as the principle of change, incomprehensible. But even if he had taken account of the real mechanism of love, his conclusions,

possibly more logical, would still have been inexact, for if sexual selection has any aim it can be but conservation. Fecundation is the reintegration of differentiated elements into a unique element, a perpetual return to the unity.

It is not particularly interesting to consider human acts as the fruits of evolution, for upon animal branches as clearly separate as those of insect and mammifer one finds sexual acts and social customs sensibly analogous, if not identical in many points.

If insects and mammifers have any common ancestor, save the primordial jelly, there must indeed have been very different potentialities in its amorphous contours to lead it here into being bee and there into being giraffe. An evolution leading to such diverse results has interest only as a metaphysical idea, psychology can get from it next to nothing of value.

We must chuck the old ladder whose rungs the evolutionists ascended with such difficulty. We will imagine, metaphorically, a centre of life, with multiple lives diverging from it; having passed the unicellular phase, we will take no count of hypothetic subordinations. One does not wish to deny, one wishes rather not to deny, either general or particular evolutions, but the genealogies are too uncertain and the thread which unites them too often broken: what, for example, is the origin of birds, organisms which seem at once a progress and a retrogression from the mammifer? On reflection, one will consider the different love-mechanisms of all the dioicians as parallel and contemporary.

Man will then find himself in his proper and rather

indistinct place in the crowd, beside the monkeys, rodents and bats. Psychologically, one must quite often compare him with insects, marvellous flowering of the life force. And what clarity from the process, lights showering in from all corners. Feminine coquetry, the flight before the male, the return, the game of yes and no, the uncertain attitude seeming at once cruel and amorous, and not peculiar to the female human? Not at all. Célimène is of all species, and heteroclite above all; she is both mole and spider, she is sparrow and cantharide, she is cricket and adder. A celebrated author in a play called, I think, La Fille Sauvage, represents feminine love as aggressive. An error. The female attacked by the male thinks always of retreat, she never, never attacks, save in certain species which appear to be very ancient and which have persisted to our time only by prodigies of equilibrium. Even there one must make reserves, for when one sees the female aggressive, it is perhaps at the second or fourth phase of the game, not at the beginning. The female sleeps until the male arouses her, then she gives in, plays, or takes flight. The virgin's reserve before man is but a very moderate bashfulness if compared with the pell-mell flight of a young mole intacta.

This is but one fact of a thousand. There is not one way of instinctive man with a maid which is not findable in one or other animal species; this is perfectly comprehensible seeing that man is an animal, submitted to the essential instincts which govern all animality; there being everywhere the same matter animate with the same desire: to live, to perpetuate life. Man's supe-

riority is in the immense diversity of his aptitudes. Animals are confined to one series of gestures, always the same ones, man varies his mimicry without limit; *but* the target is the same, and the result is the same, copulation, fecundation and eggs.

Belief in liberty has been born from the diversity of human aptitude, from man's power to reach the necessary termination of his activity by different routes, or to dodge this termination and suicide in himself the species whose future he bears. It, this liberty, is an illusion difficult not to have, an idea which one must shed if one wants to think in a manner not wholly irrational, but it is recompensingly certain that the multiplicity of possible activities is almost an equivalent of this liberty. Doubtless the strongest motive always wins, but today's stronger is tomorrow's weaker, hence a variety of human gaits feigning liberty, and practically resulting therein. Free will is only the faculty of being guided successively by a great number of different motives. When choice is possible, liberty begins, even though the chosen act is rigorously determined and when there is no possibility of avoiding it. Animals have a smaller liberty, restricted in proportion as their aptitudes are more limited; but when life begins liberty begins. The distinction, from this view-point, between man and animal is quantitative, and not qualitative. One must not be gulled by the scholastic distinction between instinct and intelligence; man is as full of instincts as the insect most visibly instinctive; he obeys them by methods more diverse, that is all there is to it.

If it is clear that man is an animal, it is also clear

sexual act is, therefore, the most important of all acts. Without it life comes to an end, and it is absurd to suppose its absence, for in that case thought itself disappears.

Revolt is useless against so evident a necessity. Our finikin scruples protest in vain; man and the most disgusting of his parasites are the products of an identical sexual mechanism. The flowers we have strewn upon love may disguise it as one disguises a trap for wild beasts; all our activities manœuvre along the edge of this precipice and fall over it one after another; the aim of human life is the continuation of human life.

Only in appearance does man escape this obligation of Nature. He escapes as an individual, and he submits as a species. The abuse of thought, religious prejudices, vices sterilize a part of humanity; but this fraction is of merely sociological interest; be he chaste or voluptuary, miserly or prodigal of his flesh, man is in his whole condition subject to the sexual tyranny. All men do not reproduce their species, neither do all animals; the feeble and the late-comers among insects die in their robe of innocence, and many nests laboriously filled by courageous mothers are devastated by pirates or by the inclemency of the sky. Let the ascetic not come boasting that he has freed his blood from the pressure of desire; the very importance which he ascribes to his victory but affirms the same power of the life-will.

A young girl, before the slightest love affair, will, if she is healthy, confess naïvely that she "wants to marry to have children." This so simple formula is the legend of Nature. What an animal seeks is not its own

life but reproduction. Doubtless many animals seem, during a relatively long existence, to have but brief sexual periods, but one must make allowance for the period of gestation. In principle the sole occupation of any creature is to renew, by the sex act, the form wherewith it is clothed. To this end it eats, to this end builds. This act is so clearly the aim, unique and definite that it constitutes the entire life of a very great number of animals, which are, notwithstanding, extremely complex.

The ephemera is born in the evening, and copulates, the female lays eggs during the night, both are dead in the morning, without even having looked at the sun. These little animals are so little destined for anything else save love that they have not even mouths. They eat not, neither do they drink. One sees them hovering in clouds above the water, among the reeds. The males, although more numerous than the females, perform a multiple duty, and fall exhausted. The *purity* of such a life is to be admired in many butterflies: the silk-moths, heavy and clumsy, shake their wings for an instant at birth, couple and die. The Great Peacock or Oak Bombyx, much larger than they, eats no more than they do: yet we see him traverse leagues of country in his quest of the female. He has only a rudimentary proboscis and a fake digestive apparatus. Thus his two or three days' existence passes without one egoistic act. The struggle for life, much vaunted, is here the struggle to give life, the struggle for death, for if they can live three days in search of the female they die as soon as the fecundation is accomplished.

THE NATURAL

Among all solitary bees, scolies, masons, bembex, and anthopores, the males born soonest, range about the nests awaiting the birth of the females. As soon as these appear they are seized and fecundated, knowing, thus, life and love in the same shiver. The female osmies and other bees are keenly watched by the males who nab and mount them as they emerge from the natal tube, the hollow stalk of a reed, flying at once with them into the air where the love-feast is finished. Then while the male, drunk with his work, continues his death-flight, the female feverishly hollows the house of her offspring, partitions it, stores the honey for the larvæ, lays, whirls for an instant and dies. The year following: the same gestures above the same reeds split by the reed-gatherers; and thus in years following, the insect permitted never the least design save the conservation of one fragile form; brief apparition over flowers.

The sitaris is a coleopterous parasite in the nests of the anthopore. Copulation takes place on hatching. Fabre noticed a female still in her wrappings, whom a male already free was helping to get loose, waiting only the appearance of the extremity of the abdomen, to hurl himself thereupon. The sitaris' love lasts one minute, long season in a short life: the male drags on for two days before dying, the female lays on the very spot where she has been fecundated, dies, having known nothing but the maternal function in the strictest limit of her birthplace.

No one has ever seen the female palingenia. This butterfly is fecundated before even getting rid of her nymph's corset, she dies with her eyes still shut, mother,

at once, and infant in swaddling clothes. Moralists love bees from whom they distil examples and aphorisms. They recommend us work, order, economy, foresight, obedience and divers virtues other. Abandon yourself boldly to labour: Nature wills it. Nature wills everything. She is complacent to all the activities; to our imaginings there is no analogy that she will refuse, not one. She desires the social constructions of bees; she desires also the Life All Love of the "Great Peacock," of the osmie, of the sitaris. She desires that the forms she has created shall continue indefinitely, and to this end all means are, to her, good. But if she presents us the laborious example of the bee, she does not hide from us the polyandrous example, nor the cruel amours of the mantis. There is not in the will to live the faintest trace of our poor little human morality. If one wishes an unique sole morality, that is to say an universal commandment, which all species may listen to, which they can follow in spirit and in letter, if one wishes in short to know the "aim of life" and the duty of the living, it is necessary, evidently, to find a formula which will totalize all the contradictions, break them and fuse them into a sole affirmation. There is but one, we may repeat it, without fear, and without allowing any objection: the aim of life is life's continuation.

THE NATURAL

CHAPTER III

SCALE OF SEXES

Asexual reproduction.—Formation of the animal colony.—Limits of asexual reproduction.—Coupling.—Birth of the sexes.—Hermaphrodism and parthenogenesis.—Chemical fecundation.—Universality of parthenogenesis.

THE primitive mode of reproduction is asexual, or what one will so consider provisorily, in comparison with more complex mechanism. In the first living forms there are neither sexual organs nor differentiated sexual elements. The animal reproduces itself by scissiparity or by budding; the individual divides itself in two parts, or a protuberance develops, forms a new being and then separates.

Scissiparity is an inexact term, for the division is transversal, and the two parts far from equal; it occurs in protozoaires, and further in worms, star-fish and polyps. Budding is common to protozoaires, infusoria, cœlenterata, to fresh-water polyps and to nearly all vegetables. A third primitive mode, sporulation, consists in the production inside the organism of particular cells, spores, which separate and become individuals; this occurs in protozoaires, as well as in ferns, algæ and mushrooms.

The first two modes, division and budding, serve also

for the formation of animal colonies, when the new individual retains a point of contact with the generating individual. It is by this notion of colony that one explains complex beings, and even superior animals, in considering them as reunions of simple primitive beings which have differentiated themselves and still retained a solidarity, sharing the physiological work between them. Colonies of protozoaires are formed of individuals having identical functions, living in perfect equality, despite the hierarchy of position; colonies of metazoaires are composed of specialised members whose separation may be a cause of death for the total individual. There is then, in the latter case, a new being composed of distinct elements which, retaining a certain essential autonomy, have become the organs of a new entity.

The first living organisms formed their hierarchies thus: individual unicellular, or plastide; group of plastides or meride. The merides, as the protozoaires, can reproduce themselves asexually, or by division or budding. They may separate completely or remain attached to their generator. If they remain attached one has mounted a step and attained the zoide. Thence, by colonies of zoides one gets individuals still more complex, called demes. None of these terms is much more than a convenience for memory. The nomenclature stops, as does the progression, at a certain moment, for the evolution has its limit, its finality, as does even the milieu in which life continues to evolve. One might say that heaving up from the obscure vital centre, the new animal-shoots branch upward until they knock their heads upon an ideal or imaginary roof which prevents any further

climbing. This is the death of the species, and Nature contemptuously abandoning her work, begins to make yet another mould of the initial ooze, to derive from it a new form. The dream of an unlimited transformation of actual species is pure chimæra; they will disappear one by one, according to their order of primogeniture, according to their faculty for adapting themselves to the changing milieu, and one might foresee, if the earth lasts, in a distant time an unimaginable fauna replacing the present fauna, and even replacing man.

Man is a metazoaire, that is to say an animal with differentiated pluricellules, like the sponge, the wheel animals, and the annelids. He belongs to the artizoaire series: a head, belly, back, bilateral symmetry; to the vertebrate branch: internal skeleton, cartilaginous and osseous; to the class of mammifers, to the sub-class of placentaires; to the group of primates not far from the chiroptera (bats) and the rodents.

In regard to the life-transmitting mechanism the animals are divided somewhat differently. On one side budding and division, or scissiparity, is prolonged rather far into the metazoaire series concurrent with sexual reproduction; on the other hand there are, among protozoaires, phenomena of coupling, unions of cellules which resemble veritable fecundation and perform its rôle; without the nuclear regeneration which is the aim and consequence, neither segmentation nor budding can take place, at least not indefinitely. In sum, the reproduction of beings is always sexual; only in the one case, the protozoaires, it is produced by non-differentiated elements; and in the other, the metazoaires, by differen-

tiated elements, a male and a female. If one clips off bits of a sponge, a hydra, one obtains as many new individuals, which when they have grown one may again divide, and so on repeatedly, but not indefinitely. At a variable instant, after a certain number of generations by fragmentation, senescence appears among the so produced individuals; the clipped morsels remain inert. Thus this sort of artificial virgin-birth has a limit, as has normal parthenogenesis, and in order that the individuals may regain their parthenogenetic force one must give them time to regenerate their cellules by the coupling which fecundates them.

Fecundation is in all cases, doubtless, merely a rejuvenation, thus considered it is uniform not only throughout the animal series, but throughout the vegetable. One ought to experiment in slip-cutting, and discover at what point the slip cut from a slip begins to diminish in vitality. Coupling and fecundation have the same result: it is necessary that cellules A unite with cellules B (macro-nucleus and micro-nucleus among protozoaires; ovule and spermatozoid among metazoaires), in order that the organism may usefully exteriorize a part of its substance. When the too complex organism has lost the primitive faculty of segmentation, it makes use, directly, to reproduce itself, of certain cellules differentiated for that purpose: it is these cellules united into a whole, which reintegrate and give birth to a double of the generating individual or individuals. From the top to the bottom of the sexual scale the new being springs invariably from a duality. The multi-

plication takes place only in space. In time the product is a contraction, two giving one.

Scissiparity is compatible with the existence of separate sexes, as in the starfish. This fantastic animal with no instrument save its suckers opens oysters, envelops them with its stomach which it unbellies (vomits), devours them. It is not less curious in reason of its variety of reproductive mode, serving itself of sexual apparatus, or budding, or casting an arm which becomes a new creature. Thus it is difficult to class animals according to their manner of reproduction; hermaphrodism is another block. This mode is doubtless primitive, since it is of the type of protozoaire coupling, but it is greatly complicated when it persists, for example up to the moment where it disappears in the mollusk series, whereof some possess so luxurious a love-organism. The simple and very naïve form, that in which the sperm and the eggs are produced simultaneously inside the same individual, is found only in inferior organisms. Normal parthenogenesis belong equally to summary and to complicated animals, to wheel-animals and to bees. Among arthropodes, that is to say among insects in general, the sexes are always separate, save in certain tardigrade arachnids, but these are the ones which offer the finest cases of parthenogenesis, generation without aid of the male. The term need not be taken literally. For as there is no indefinite scissiparity without coupling, there is no unlimited parthenogenesis without fecundation: the female is fecundated for several generations which transmit this power, but there comes a day when the female who has not encountered a male gives birth to males and females.

They couple and produce females parthenogenetically endowed. This has been for long time a mystery,—it is still a mystery, for side by side with normal parthenogenesis there is irregular parthenogenesis, there are cases where non-fecundated eggs behave exactly as fecundated eggs, without anyone's knowing why.

The virgin-begotten cycle of plant-lice is famous, that of wheel-animals not less entertaining. The males, smaller than the females, live but two or three days, couple and die. The fecundated females lay eggs whence come nothing but females, unless the eggs are subjected to a temperature above 18 degrees (centigrade); above that the eggs hatch out males. Between the periods of coupling there are long stretches of virgin-birth, nothing but females producing females, until the temperature permits a male hatch. In two years the plant louse runs through ten or twelve parthenogeneses; in July of the second year, there appear winged individuals, these are still female, but double size, and they lay two sets of eggs, whereof the smaller hatch male (the male is three or four times smaller than the female), the larger eggs hatch female; there is coupling and the cycle begins again.

For long people believed the plant louse truly androgynous. Réaumur and Bonnet, having seen isolated plant-lice reproduce themselves were convinced of this, when Trembley, a man of genius, celebrated also for his observations of hydra, threw out the idea: Who knows whether a coupling of these lice does not fecundate them for several generations? He had discovered the basis of parthenogenesis. Facts upheld him. Bonnet described

is merely in that it puts two parthenogenetic products into relation. This relation occurs inside the female, or outside the female (as in case of fishes); the milieu has an importance of fact, not of principle.

PHILOSOPHY OF LOVE

CHAPTER IV

SEXUAL DIMORPHISM

I. *Invertebrates: formation of the male.—Primitivity of the female.—Minuscule males: the bonellie.—Regression of the male into the male organ: the cirripedes.—Generality of sexual dimorphism.—Superiority of the female in most insect species.—Exceptions.—Numeric dimorphism. —Female hymenoptera.—Multiplicity of her activities.—Male's purely sexual rôle.—Dimorphism of ants and termites.—Grasshoppers and crickets.—Spiders.—Coleoptera.—Glow-worm.—Cochineal's strange dimorphism.*

1. INVERTEBRATES.—At a moment fairly undecided in the general evolution the male organ specializes into the male individual. Religious symbolisms may or might have been intended to mean this. The female is primitive. At the third month, the human embryo has external uro-genital organs clearly resembling the female organs. To arrive at complete female estate they need undergo but a very slight modification; to become male they have to undergo a considerable and very complex transformation. The external genital organs of the female are not, as has been often said, the product of an arrested development; quite the contrary, the male organs undergo a supplementary development, which is

moreover useless, for the penis is a luxury and a danger: the bird who does without it is no less wanton thereby.

One finds general proof of the female's primitivity in the extreme smallness of certain male invertebrates, so tiny indeed that one can only consider them as autonomous masculine organs, or even as spermatozoides. The male of the syngames (an internal parasite of birds) is less a creature than an appendix; he remains in constant contact with the organs of the female, stuck obliquely into her side, and justifying the name "two-headed worm" which has been given to this wretched and duplex animalculus. The female bonellie is a sea worm shaped like a sort of cornucopia sack fifteen centimetres in length: the male is represented by a minuscule filament of about one or two millimetres, that is to say about one-thousandth her size. Each female supports about twenty. These males live, first in the œsophagus, then descend into the oviduct where they impregnate the eggs. Only their very definite function clears them from the charge of being parasites; in fact they were long supposed to be parasites, while men sought vainly for the male of the prodigious bonellie.

Side by side with males who are merely individualized sexual organs, one sees males who have lost nearly all organs save the male organ itself. Certain hermaphrodite cirripedes (mollusks attached by a peduncle [stalk]) cling as parasites to the coat of other cirripedes: whence a diminution of volume, a regression of ovaries, abolition of nutritive functions; the stalk takes root in the living, nourishing milieu. But one organ, the male one, persists in these diminished cirripedes, and takes on enor-

mous proportions, absorbing the whole of the animal. With only a slight further change one would see the transformation of male into male organ completely accomplished, as one does, moreover, in the hydraria. Become again an integral part of an organism from which it had formerly separated to become an individual, the male merely returns to its origins and clearly certifies what they were.

The bonellie, which is one of the most definite examples of dimorphism, is also an example of the singular feminism which one normally finds in nature. For feminism reigns there, especially among inferior species and in insects. It is almost only among mammifers and in certain groups of birds that the male is equal or superior to the female. One would say that he has slowly attained a first place not intended by nature for him. It is probable that, relieved of all care, after the fecundation, he has had more leisure than the female wherein to develop his powers. It is also possible, and more probable, that these extremely diverse cases of resemblance and dissemblance are due to causes too numerous and too varied for us to seize their logical sequence. The facts are obvious: the male and the female differ nearly always, and differ often profoundly. Many insects vulgarly supposed to be different species are but males and females of one race seeking each other for mating. It needs some knowledge to recognize a pair of blackbirds, the male black all over, and the female brown-backed with grey throat and russet belly.

While hermaphrodism demands a perfect resemblance of individuals—save in cases like the cirripedes, where

there is a male supplementary parasite—the separation of the sexes leads, in principle, to dimorphism, the rôle of the male, his modes of activity differ from those of the female; a difference found also among dioic plants. Hemp is a well known case, although the taller shoots which the peasants call male are, in exact contrary, the females. The small garden-loving nettle has two sexes on the same stalk; the greater nettle, found in uncultivated land, is dioic: the male stalk has very long flopping leaves and flowers hanging along the stem; the leaves and flowers of the female stalk are short and stand almost upright. Here the dimorphism is not in favour of the female, but impartial.

Of insects the female is nearly always the superior individual. It is not this marvellous small creature, nature's divergent and minuscule king who offers us the spectacle of the bilhargie, spearwort, whereof the female, mediocre blade, lives, like a sword sheathed in the hollow stomach of the male. This timid life and its perpetual amours would horrify the bold female scarabœa, adroit chalicodomes, cold wise lycoses, and proud, terrible, amazonian mantes. In the insect world the male is the frail elegant sex, gentle and sober, with no employment save to please and to love. To the female the heavy work of digging, of masonry, and the danger of hunt and of war.

There are exceptions, but found chiefly among parasites, among the degraded, like the xenos which lives without distinction upon wasps, coleoptera, and nevroptera. The male is provided with two large wings; the female has neither wings, feet, eyes, nor antennæ; is a

small worm. After metamorphosis the male emerges, flies a little, then returns to the female who has remained inside the nymphal envelope, and fecundates her in her wrappings.

Other exceptions, this time normal, are furnished by butterflies, that is to say by a sort of insect which is very placid, and which, at least in the winged form, is addicted neither to hunting nor to any trade or business function. One gives the name "psyche" to a very small butterfly which flutters out rather clumsily in the morning; it is the male. The female is a huge worm, fifteen times as long, ten times as fat. The lovers are in the proportion of a cock to a cow. Here the feminism is wholly ludicrous. There is the same disproportion in the mulberry bombyx, of which the female is much heavier than the male; she flies with difficulty, a passive beast who submits to a fecundation lasting several hours; likewise in the autumn butterfly, cheimatobia, the male sports two pairs of fine wings on a spindle body, the female is a gross fat keg with rudimentary wings, incapable of flight; she climbs difficultly into trees on whose buds her caterpillar feeds itself; in the case of another butterfly which one calls, absurdly, the orgye, the male has all the characteristics of lepidoptera, the female is almost wingless with a heavy and swollen body and a carriage about as pleasing as that of a monstrous wood-louse; there is the same disproportion in the graceful, agile and delicate liparis, known as the zig-zag because of his wing-markings; he would hardly discover his mate without aid from instinct, she being a whitish beast with heavy abdomen ruminating motionless in the tree-bark.

gourmandizing: the philanthe kills bees in order to feed her larvæ, who have, however, so great a repugnance for honey that they die upon contact with it; it is therefore out of sheer maternal devotion that she intoxicates herself with this poison! All things are, in nature, possible. But it might not be unreasonable to say that if the larvæ of the philanthe hate honey, it is because their greatly honey-loving mother has never allowed them a drop of it.

One of the rare cases of hymenoptera where the female appears inferior to the male is the mutille or ant-spider. The male is larger, has wings and lives on flowers. The female is apteral, but provided with a noisy apparatus for attracting the male's attention. The male of the cynips of the oak-apple, the terminal cynips, has a blond body with large diaphanous wings, the brown and black female is wingless. The male yellow cimbex slender, and brown with a spot of yellow, is so different from the round female with yellow belly and black head, that they were long thought of different species.

Ants like all social hymenoptera are, as one knows, divided into three sexes, winged males and females and wingless neuters. Fecundation takes place in the air; the lovers fly up, join, fall enlocked, a golden cloud which the death of the males disperses, while the females, losing their wings, re-enter the house for egg-laying. The workers or neuters are generally smaller, as noticeably in the great red wood-ants, who dig their shelters in stumps. White ants or termites[1] show very accentuated dimorphism;

[1] These are nevroptera or pseudo-nevroptera, but their habits bring them noticeably near to social hymenoptera.

the female or queen having a head almost as large as that of a bee, a belly the thickness of one's finger, long in proportion, and growing to be fifteen times as large as the rest of her body. This sexual tub lays continuously without any let-up at the speed of an egg per second. The male, as in Baudelaire's vision of the giantess, lives in the shadow of this formidable mountain of female power and luxury. Among the termites there is not a fourth sex but a fourth way of being sexless. There are soldiers as well as workers, the soldiers having powerful mandibles mounted on enormous heads. All the termite customs are extraordinary, and their conic nests reach a height having a relation to them that a house five or six hundred metres high would have to us.

Of mosquitoes and maringouin mosquitoes and all insects of that sort, the females alone prick and suck the blood of mammifers. The males live on flowers and tree-trunks. One sees them in forest alleys and clearings, moving regularly as in army manœuvres, they are scouting, watching for females; as soon as a male has caught one he seizes her, and disappears up into the air where the union is accomplished. Only the male cricket has a noise-machine, only the female a hearing mechanism, situated in her front legs. Likewise it is the male grasshopper who sounds. A love-call? People say so, but there is no proof. Grasshoppers live, male and female in complete promiscuity lined up on the tree-bark; such a quantity of music is unnecessary, and moreover if the female grasshopper isn't deaf, she has an almost insensible hearing. It is probable that the song of insects and birds, if it is sometimes a love-call, is

more often only a physiological exercise, at once necessary and disinterested. Fabre, who lived all his life among the implacable noises of the Provençal countryside, sees in "the violin of the locust, in the bag-pipe of the tree-toad, in the cymbals of the cacan only a means suitable to expressing the joy of living, the universal joy which each animal species celebrates in its own fashion.[1] Why then is the female mute? It is certainly absurd and profoundly useless to summon, in almost uninterrupted song, from morn till eve, a companion whom one sees seated beside one pumping the juice out of a plane-tree; but it has perhaps not always been so. The two sexes may have had, in the past, habits more divergent. The plane-tree which unites them in the same feeding-ground has not always grown in Provence. The unending song may have been useful at a time when the sexes lived separate, and may have remained as evidence of ancient customs. It is moreover a commonly observed fact that activities long survive the period of their utility. Man and all animals are full of maniac gestures whose movement is only explicable on the hypothesis that it had once a different intention.

The female spider is nearly always superior to the male in size, industry, activity, and means of defence and attack. We will note their sexual habits later, but must observe here their particular cases of dimorphism. The Madagascar she-epeire is enormous, very handsome, black, red, silver and gold. She rigs up a formidable web in her tree, near which one sees always a modest and puerile skein, the work of a minuscule male keeping an

[1] Souvenirs entomologiques, tome V. p. 256.

anxious eye on the chance of sidling up to his terrible mistress, and risking his wedding-death. The argyronete or water-spider, returns the balance to the male, who is fatter, larger, and provided with longer limbs.

The male triumphs again, and more frequently, among coleoptera. The nasicorn scarab, so called most aptly because he carries on his head a long back-bending arched horn, has all his chest solidly armoured; the female has neither horn nor cuirass. Everyone knows the flying-stag or lucane (stag-beetle, bull-fly), enormous coleoptera which flies through the summer evening buzzing like a top. He is feared for the bold appearance of his long mandibles which branch like stag's horns and which the uninstructed take for dangerous pincers. He is the male, his war-gear pure ornament, as he lives inoffensively by sucking tree-sap. The much smaller females are devoid of warlike apparatus, they are very few in number, and it is in the excitement of searching for them that the male, whose life is short and who knows it, whirls like a maniac, and bangs himself into our trembling ears. Here again one divines animals who have changed their habits more quickly than their organs. The old pirate has kept his daggers and axes, but abandoned, no one knows why, to vegetarian diet, he has lost all power to use them, he is merely a stage-super. But maybe this gear impresses the female? She cedes more willingly to this hector who gives her the illusion of strength, that is of the male's beauty.

The glow-worm is a real worm, but a larva rather than a definitive animal. The male of this female is a perfect insect, provided with wings which he uses to

seek in the darkness the female who shines more brightly as she more desires to be looked at and mounted. There is a kind of lampyre of which both sexes are equally phosphorescent, one in the air, the male, the other on the ground where she awaits him. After coupling they fade as lamps when extinguished. This luminosity is, evidently, of an interest purely sexual. When the female sees the small flying star descend toward her, she gathers her wits, and prepares for hypocrite defence common to all her sex, she plays the belle and the bashful, exults in fear, trembles in joy. The fading light is symbolic of the destiny of nearly all insects, and of many animals also; coupling accomplished, their reason for being disappears and life vanishes from them.

The male cochineal has a long body with very delicate wings, transparent and which at a distance look like those of a bee; he is provided with a sort of tail formed of two silky strands. One sees him flying over the nopals, then suddenly alighting on a female, who resembles a fat wood-louse round and puffy, twice as stout as the male, wingless. Glued by her feet to a branch, with her proboscis stuck into it, continually pumping sap, she looks like a fruit, like an oak-apple or oak-gall on a peduncle for which reason Réaumur called her picturesquely the gall-insect. In certain species of cocides the male is so small that his proportion is that of an ant strolling over a peach. His goings and comings are like those of an ant hunting for a soft spot to bite, but he is seeking the genital cleft, and having found it, often after long and anxious explorations, he fulfills his functions, falls off and dies.

PHILOSOPHY OF LOVE

CHAPTER V

SEXUAL DIMORPHISM

II. *Vertebrates:—Unnoticeable in fish, saurians, reptiles.—The Bird World.—Dimorphism favourable to males: the oriole, pheasants, the ruff.—Peacocks and turkey-cocks.—Birds of paradise.—Moderate dimorphism of mammifers.—Effects of castration on dimorphism.*

II. VERTEBRATES.—Sexual differences are generally unnoticeable in fish, reptiles and saurians. They are accentuated when we come to superior vertebrates, to birds and mammals, but without ever attaining the extreme difference which characterizes a great number of arthropodes. In birds the disparity may be of colouring, size, or length, form and curliness of the feathers; among mammals, of shape, hair, beard or horns. Sometimes the female bird is finer and stronger; thus stronger and of more powerful wing-spread in the case of the secretary, the buzzard, the falcon, the ash-coloured vulture and many birds of prey; more beautiful as in the Indian turnices.[1] One of them, the gray phalarope, solves woman's dream in favour of the female, leaving her the brilliant colours; the male contents himself with more

[1] Bird, rather like quail.

female is without ornament. The sifilet, a bird related to the birds of paradise has, fixed between eye and ear a pair of fine plumes twice the length of his body, which float as he walks like white blue-shimmering streamers. It is a lover's paraphernalia, which the female in consequence does without, while the male loses his after mating.

The dissemblance of barnyard cock and hen are well enough known to give everyone a clear idea of dimorphism in birds and to show difference of characters parallel with difference of form.

The dimorphism of mammals is even less often favourable to the female than is that of birds. One can cite but the sole example of the American tapir where the male is smaller than the female.[1] The contrary is nearly always the case. Sometimes the two sexes have an identical appearance: cougars, cats, panthers, servals. If there is a rule, it is difficult to formulate, for side by side with these felines without sexual dimorphism, the sex of lions and tigers clearly determines their forms.

Among mammifers there are bizarre resemblances and baroque differences. The he and she mole, at first sight, appear the same even to their exterior sexual organs, the female's clitoris is, like the male's penis, perforated to let the ureter pass through it. But here, as we shall see later, the morphologic resemblance by no means indicates similarity of characters; the female mole is excessively female. There is baroque difference of sexes in the capped seal of Greenland and Terra Nova. The male can puff out his head-skin into an enormous

[1] Translator's note. O sinistre continent.

helmet. To what purpose? Possibly to scare naïve enemies. True to her rôle of protégé the female can not throw this bluff, which is used by Chinese warriors, by certain insects like the mantis and by the cobra among serpents.

She-brown bears and she-kangaroos are smaller than males. In all the deer tribes save reindeer the male alone is horned, and this is the by no means ridiculous origin of a very old joke, for the does are lascivious and are pleased to receive the attentions of a number of males. The difference of bull and cow is distinct enough, that of stallion and mare less so, diminishing still further between dog and bitch, and being almost null among cats. In all cases where the dimorphism is slight, and is the direct consequence of the possession of sexual organs, castration inclines the male toward the female type.[1] This is as apparent in cattle as in eunuchs or gelded horses. One may see in this yet another proof of the primitivity of the female, since the abstraction of testicles suffices to give the male that softness of form and character which typifies females. Masculinity is an augmentation, an aggravation of the normal type represented by femininity; it is a progress, and in this sense it is a development. But this reasoning, good for mammals, would be detestable among insects, where the accentuation of type is nearly always furnished by the female. There are no general laws in nature, unless they be those which regulate all matter. With the birth of life,

[1] Castration of females seems, at least, among humans, to bring them nearer the male type. Effects of castration vary, necessarily, according to the age of the subject.

the unique tendency diverges at once upon multiple lines. Perhaps we must throw this point of divergence still further back, for a metal like radium seems to differ from other metals as much as an hymenopter from a gasteropod.

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CHAPTER VI

SEXUAL DIMORPHISM

III. *Vertebrates (continued).—Man and woman.—Characteristics and limits of human dimorphism.—Effects of civilization.—Psychologic dimorphism.—The insect world and the human.—Modern dimorphism, basis of the pair.—Solidarity of the human pair.—Dimorphism and polygamy.—The pair favours the female.—Sexual æsthetics.—Causes of the superiority of feminine beauty.*

III. VERTEBRATES *(continued)—Man and woman.*— Among primates sexual dimorphism is but little accentuated, especially when the male and female live the same life in the open air and share the same labours. The male gorilla, very strong and very pig-headed, flees from no enemy; the female on the contrary is almost timid: when surprised in company with the male, she cries out, gives the alarm and escapes. But attacked when alone with her offspring, she resists. One can easily distinguish the male and female orang-outang, the male is larger with longer more bristling hair, he alone has a Horace Greeley beard; in the female the patches of bald skin are much less callous. But the great difference between the

sexes in gorilla and orang-outang is in the males having vocal sacks descending over the chest to the arm-pits.

Thanks to these air-reservoirs, these bag-pipe bags, inflatable at will, the male can howl for a very long time and with great violence; the females' sacks are very small. Other monkeys, notably howling apes, are provided with these air-chambers, as are also certain other mammifers well known for the extravagance of their cries: polecats and pigs. Birds and batrachians have analogous organs.

Dimorphism of men and women varies according to race or rather according to species. Very feeble in most blacks and reds it is accentuated among Semites, Aryans, and Finns. But in man as in all animals of separate sexes one must differentiate between the primary dimorphism, which is necessary and produced by the specialization of sexual organs, and the secondary dimorphism with which the relation of sex is less evident or wholly uncertain. Limited to the non-sexual elements, human dimorphism is very feeble. Almost null in infancy, it develops with approaching puberty, is maintained during the genital period, and diminishes, sometimes almost to vanishing point, in old age. It varies individually, even during the years of greatest reproductivity, in males feebly sexed and in women heavily sexed: that is to say there are men and women whose type closely approaches the type-ideal formed by the fusion of sexes; neither one nor the other escapes the radical dimorphism imposed by the difference of sexual organs.

Leaving aside exceptions, one observes a mediocre and constant dimorphism between men and women,

which may be expressed as follows, taking the male for type: the female is smaller and has less muscular force, she has longer head hair, but in contrast the hair-system is very little developed over the rest of her body, excepting in the armpits and pubis; aside from the teats, belly and hips, whose form is sexual, she is normally fatter than the male, and in direct consequence of this, her skin is finer; her skull-capacity is inferior by about 15% (man=100; woman=85) and her intelligence, less spontaneous, inclines in general to activities entirely practical. There is hardly any difference in the male and female skulls of every inferior human species, the contrary is true of civilized races. Civilization has certainly accentuated the initial dimorphism of man and woman—at least unless one of the very conditions of civilizations be not precisely a notable difference, morphologic and psychologic, between the two sexes. In that case civilization has but accentuated a native dimorphism. This is more probable, for one does not see how civilization could have caused the dimorphism, not at least unless it had already existed as a very strong tendency. Identical work, the same utilization of instinctive activities have managed greatly to reduce dimorphism of forms, for example, in dogs and horses, but this has had no influence on the psychologic dimorphism. Cultivation of instinct has never been able to efface, in the most specialized breeds of dogs, the peculiar tonality which instinct receives from sex. It is improbable that intellectual culture could fashion women in such a way as to rid them of the characteristic colour which sex imparts to their intelligence.

THE NATURAL

One uses the words instinct and intelligence to flatter prejudiced people. Instinct is merely a mode of intelligence.

Dimorphism is a constant fact in the animal series. Favourable to the male, favourable to the female, indifferent, it starts always from sexual necessity. There is a job to be done: nature divides it equally, or not, between male and female. She knows neither justice nor equality, and lays heavy burdens upon some, even to mutilation and premature death, while she gives to others liberty, leisures, and long hours of pleasant life. It is necessary that the couple reproduce a certain number of beings, equals of the unities of which itself is formed: all means are good which attain this end, and which attain it most speedily and most surely. Nature who is pitiless, is also in a hurry. Her imagination, always active, invents, ceaselessly, new forms which she casts into life, in measure as the earlier born finish their cycle. In superior mammals, and particularly in human species, division of labour is the means used by nature to insure the perpetuity of types. The female insect (leaving aside for the moment social hymenoptera) is provided at once with the organs of her sex and with tools of her trade, with arms for guarding the race; the female human has ceded to man the tools and weapons, here merged in the one instrument, muscle. Or rather, keeping her rights to the instrument, she gives up the use of it. She is neither warrior, huntress, nor mason, nor butcher; she is the female, and the male is the rest. The division of labour supposes community. In order that the female may cede the cares for subsistence and defence to the

male, the couple must be established and permanent. The male osmie (sort of solitary bee) sees the light before his female; he could prepare the nest, or at least choose its situation, guide the female to it, work or watch; but he belongs to a series of animals in which the males are merely male organs, and all his rôle is contained in the gestures of mating. The couple is not yet formed. When it is formed, as in other kinds of insects, scarabs, copris, sisyphs, geotrupes, the work is equally shared between the two sexes. Here the parallel ends, for the social evolution of the insect has led to functional differentiations extremely complicated, and if not unknown, at least abnormal, to humanity. Bee society has the female for base, human society has the couple. They are organisms so different that no comparison of them is possible, or even useful. Only in ignorance of them, can one envy bees; a community without sexual relations is really without attraction for a member of the human community. The hive is not a society but a hatchery.

The couple is only possible with a dimorphism, real but moderate. There must be a difference, especially of strength, in order for there to be a true union, that is to say subordination. A couple formed of equal elements, like a society of equal elements, would be in a state of permanent anarchy; two creatures suffice for anarchy, as for war. A couple formed of elements too unequal, would, by the crushing of the weaker, find itself reduced to tyrannized unity. Man and woman, as is the case with other primates and the carnivora (for most herbivora are polygamous) represent two sexes made to

live united and to share jointly in the cares for their offspring. The state of couple, demanding a certain dimorphism, assures by it, its perpetuity. When the couple is dissolved, be it by polygamy or by promiscuity, as has happened among Mohammedans, and among Christians (a religion, long powerful, functions both as race and as milieu) the dimorphism is accentuated, each of the elements escapes, in some measure, the strict influence of the other sex. Likewise if, in consequence of identical education, the psychologic dimorphism is attenuated, even slightly—it never is attenuated more than slightly—or if physical games reduce a little the physical differences, the couple is less easily formed and grows less stable: hence adultery, divorces, excess of prostitution. In all monogamous society, prostitution is the strict consequence: it diminishes more or less in polygamous societies where the free women are rarer, it would only disappear completely in promiscuity, that is to say in universal prostitution.

Polygamy, apart from its indirect influence, has, by the internment of women, a direct one on the dimorphism. Set apart from the active life of the outer world, and even from the air and light, the female of the male polygamous human becomes whiter, whatever may have been her initial colour, fatter, heavier, and also more stupid and more addicted to all sorts of onanism. Among Indian Mussulmen the man and woman appear to belong to different species, the man being so tanned, and the woman so colourless. Shut-in prostitutes of the occident also lose colour, and one would with difficulty recognize two sisters in the soft, bleached whore and the

sun-reddened, hardy cow-girl. Woman's liberty also accentuates the dimorphism but by another process. Freed from the bridle of necessity, from the need of pleasing, woman escaped from the couple, exaggerates her feminism, she becomes again the female in excess, since it is in being more and more female that she has most chances of seducing the male, who is insensible to all other merit. And, inversely, a woman having man's education is, given equal beauty, less than any other a seductress.

Thus, while the disintegration of the couple augments the feminine dimorphism, the diminution of the natural dimorphism renders the transformation of the couple more uneasy and more precarious. The human couple is an harmony difficult to realize, very easy to destroy, but in measure as one destroys it one frees the elements which will, necessarily, re-create it. (We will return later to polygamy, human and animal; but must here examine its relation to dimorphism. All the questions treated in this book are, moreover, so interlocked, that it will be difficult to prevent one or other of them from cropping up apropos no matter what other. If the method is less clear it is perhaps more loyal. Far from wishing to impart human logic to nature, one attempts here to introduce a little natural logic into the old classic logic.)

The sole aim of the couple is to free the female from all care that is not purely sexual, to permit her the most perfect accomplishment of her most important function. The couple favours the female, but it favours also the race. It is fully beneficial when the woman has acquired the right of maternal laziness. There is another reason

rarely present their characteristics with sufficient distinction, moreover the first is rather rare: it is the one which sculptors have vulgarized by amelioration. Compare a series of photographs of art with a series of photos from the nude, and you have proof enough that the beauty of the human body is an ideologic creation. Take away the egoistic sentiment of the race, and the sexual delirium, and man would appear very inferior in harmonic plentitude to most of the mammifers; the monkey, his brother, is, frankly, inæsthetic.

PHILOSOPHY OF LOVE

CHAPTER VII

SEXUAL DIMORPHISM AND FEMINISM

Inferiority and superiority of the female as shown in animal species.—Influence of feeding on the production of sexes.—The female would have sufficed.—Feminism absolute, and moderate.—Pipe-dreams: elimination of the male and human parthenogenesis.

ONLY after serious study of sexual dimorphism in the animal series may one venture a few reflections on feminism. One has noticed, in certain species, the female more beautiful, stronger, more active, more intelligent; and one has noticed the opposite. One has seen the male larger, or smaller; one has seen and will see him parasite, or provider, permanent master of the couple or the group, fugitive lover, a slave sacrificed by the female after the completion of her pleasure. All attitudes, and the same ones, are attributed by nature to either of the sexes; there is not, apart from the specific functions, a male or a female rôle. Both or either according to the decalogue of their specie put on the same costume, don the same mask, wield the same boar-spear, tool or sabre without one's being able to discover, at least not without going back to the beginning of things and digesting the archives of life, which of them is disguised and which acts "according to nature."

THE NATURAL

The abundance of food, especially nitrogenized (? azotized) will produce a greater number of females. With certain animals at transformation one may act directly on individuals: tadpoles gorged on mixed food, vegetables, larvæ, chopped meat, have given an excess of females approaching totality (95 females to 5 males). On the other hand over-feeding tends to abolish stamens in plants, the stamens turn into petals, suralimentation even moults the petals into leaves and the buds into shoots. Richness of means, well-being, intensive feeding abolish sex, but the last to be affected is the female, which in sum, perseveres obscurely in the unsexed plant, forced back to its primitive means of reproduction, or to reproduction by slip cutting. If excessive alimentation tends to suppress the male, it would then appear that the separation into two sexes is a means of diminishing the costs of the total being. The monoic type is a step toward this simplification of labour; the female at a given moment eliminates her male organ, refuses to feed it, frees herself from the burden which has only a momentary utility. And, following this, provided in herself with an overabundance of all that maintains life, she divests herself of the specialized sexual apparatus, unsexes herself, that is to say, the identity of contraries being here evident, she is sexed throughout all her parts: *tota femina sexus.*

The male is an accident: the female would have sufficed. Brilliant as are, in certain animal species, the destinies of the male, the female is primordial. In civilized humanity she is born in proportion greater as the civilization approaches a greater plenitude; and this

very plenitude diminishes, proportionately, the general fecundity: whether we treat of man or of apple-trees, the male element in- or de-creases according to famine or abundance of nourishment. But the human race is not sufficiently plastic for the variation of births to be ever very great between the two sexes; and no warm-blooded animal is sufficiently plastic for this cause, so active among vegetables, ever to lead to the dissolution of the male. There are no natural laws, there are tendencies, there are limits: the fields of oscillation are determined by the pasts of species, trenches curving into cloisters which close, in nearly all directions, the alleys of the future.

It is a fact, from henceforth hereditary, that the male of the human species has centralized in himself most of the activities independent of the sexual motor. He alone is capable of disinterested works, that is to say of aims unconnected with the physical conservation of the race, but without which civilization would be impossible, or at least very different from what it is and from the idea which we have of its future. Doubtless in humanity, as in the rest of nature, the female represents the important sex. In utter need, as with the mason bee, she could serve for the absolutely necessary work, to build the shelter, to gather the food, and the male might, without essential damage be reduced to the rôle of mere fecundating apparatus. The number of males could, and even should in such case, diminish with due rapidity, but then human society would in- or de-cline toward the type represented by that of social bees: continual labour being incompatible with the periods of maternity,

the feminine sex would atrophy, a single female would be elevated to the dignity of queen and mother, the rest of the population would work stupidly for an ideal exterior to its own sensibility. Even more radical transformations would not be anti-natural. Virgin-birth might establish itself: certain males could be born in each century, as happens in the intellectual order, and they could fecundate the generation of loins, as genius fecundates the generation of minds. But humanity, by the richness of its intelligence, is less than other animal species submitted to causal necessity; by constant squirming in its nets, it has managed to displace a cord here and there, and makes now and again the unexpected movement. The coming of males once in a century would be unnecessary if some mechanical device were found for exciting the life of woman's eggs, as one excites those of the sea-anemone. If a few males were born from time to time, by an atavistic quirk of nature, they could be exhibited as curiosities, as we now exhibit hermaphrodites.

The feminist ideal leads us to these pipe-dreams. But if it comes to destroying the couple and not to re-forming it, if it comes to establishing a vast social promiscuity, if feminism resolves itself into the formula: free-woman in free-love, it is even more chimerical than all the chimæra which have at least their analogy in the diversity of animal habits. Human parthenogenesis is less absurd: it offers an order, and promiscuity is a disorder. But social promiscuity is impossible by the further reason that woman, the more feeble, would be crushed by it. She struggles against man only, thanks to the privileges

which man concedes her, when troubled by sexual inebriety, intoxicated and drowsy with the fumes of desire. The factitious equality which she claims would re-establish her ancient slavery, on the day when most or all women wish to enjoy it: that is still another possible solution of the feminist crisis. However one looks at it, one sees the human couple re-establish itself ineluctably.

It is very difficult, from the standpoint of natural logic, to sympathize with moderate feminism, one could more easily accept feminism in excess. For if there are in nature numerous examples of feminism, there are very few of an equality of the sexes.

side and a purse stuffed inside; a female fœtus resembles a male fœtus, so as to deceive anyone; the part which occasions the error, sinks in the female fœtus in measure as the purse extends inward; it is never obliterated to the point of losing its primitive form; it also is the mover of pleasure, it has its gland, its foreskin, and one notes at its extremity a point which appears to have been the orifice of a urinary canal which has closed; there is in man from the anus to the scrotum, the interval called the perinæum, and from the scrotum to the end of the prong, a seam which looks like the resewing of a basted vulva; women with excessive clitoris, have beards, eunuchs have not, their thighs increase, their hips widen, their knees round out, and in losing the characteristic organization of one sex they seem to return to the characteristic conformity of the other. . . ." In terms less literary, one considers as homologous, in man and woman, the ovary and the testicle, lesser labia, clitoridian cap and sheath, the hanging foreskin; the greater labia and the envelope of the scrotum; clitoris and penis; the vagina and the prostatic utricle. One will find the details of these analogies in special works, they can not be given here with scientific precision. The sole point to hold on to is that the two sexes not only in man, and not only in mammifers, but in nearly all the animal and vegetable series, are but a repetition of the same creature with specialization of function. This specialization may extend to functions other than sexual, to work (bees, ants) to war (termites). The soldier termite is extraordinary; he is not more so than the male.

The sexual parallelism is constant among nearly all

vertebrates and arthropodes; it extends to identity among hermaphrodite mollusks if one then compare not two sexes but two individuals. It extends, for each sex considered separately, along the whole zoölogical chain. Parting from link animals which separate into two parts, one sees the sexual organs design themselves in the form wherein they arrive in higher animals of great complexity, such that, in acquiring differences of form and position they retain a remarkable stability of structure; one would say almost of identity in marsupials, reptiles, fish, birds. For clarity one must proceed from the known to the unknown; man is the figure to whom one may compare necessarily the observations on other animals.

There is no lack of point in knowing the normal love-mechanism, since moralists pretend to regulate its movements. Ignorance is tyrannic; the inventors of natural ethics knew very little of nature: this permitted them to be severe; for no definite piece of knowledge interfered with the certitude of their gestures. One becomes more discreet when one contemplates the prodigious picture of the erotic habits of the animal world, and even entirely incompetent to decide flatly, yes or no, whether a fact is natural or unnatural.

Man is a placentary mammifer: by this title his genital organs and their mode of employ are common to him and to all hairy animals having teats and an umbilicus. He is not normally covered all over with hair, but there is hardly a spot on his body where hairs may not sprout, and both sexes are hairy often with extreme abundance in pubis and arm-pits. The male and active

organ of mammifers is the penis, usually completed exteriorily by the testicles. The penis is, at once, the excreting *conductor* of urine and sperm; an analogous relation exists in the female, and it is with exactitude that these mingled organs have been called genito-urinary or more recently, uro-genital; it is the same in all the animal series, the urethra opens exteriorily or it ends, as in birds, in a cloaca, vestibule, for all the excretions.

The penis of two-handed (bimanous) creatures descends freely, it hangs before the pubis in quadrumanes, and in chiroptera (bats). The bat is strangely like man, and like primates in general: five fingers to the hand, one a thumb, five fingers on the foot, pectoral teats, mensual flux, free penis; it is a little caricature of man, abrupt and frightened in its evening flight about houses. Among flesh-eaters, ruminants, pachyderms, solipedes and several other families of mammals, the penis is sheathed in a scabbard which stretches along the belly; thus preserved against accidents and insect stings, while its sensibility is maintained intact. Voyagers, according to Buffon, have seen Patagonians trying to get like results by tying the foreskin above the gland, like a bag with a cord. Thus man's hand permits him to improve or mutilate his body. Mutilation and sexual deformations, circumcision among Semites and savages, excision of Russian illuminati, transversal perforation of the gland, surgical flattening of the prong, are very frequent. The hand of the chiroptera is shackled, that of quadrumanes has only one sexual rôle, masturbation. It may also serve as a shield against external danger; many quadrumanes, better protected, make the same use

of their tail when they curl it between their legs, this is sometimes a psychological gesture, female modesty or refusal, sometimes a gesture of preservation. The movements of Venus modest, of man coming naked from his bath, have no other origin. Monkeys when they stop moving about, place their hands on their sexual parts. The Polynesians, before Christianity, had the custom when standing upright, of holding their scrotum in both hands with the prong hanging between the fingers: the posture of the wild dandy. Certain species lack scrotum as Pliny had already remarked: *Testes elephanto occulti.* In camels the testicles roll beneath the skin of the groin; rats' testicles are internal, but emerge in the rutting season and assume an enormous development. Apes often have the pouch-skin blue, red or green, like the other bald parts of their bodies.

Camels, dromedaries and cats have the end of the penis bent backward (this explains the tom-cat's manner of urination), the tip does not straighten itself or point forward save in erection. Not only the prong but the sheath of rodents points backward and ends near the anus, and in front of it. The penis is slender in ruminants, and in wild boar; thick and round in solipedes, elephant, lamentin (sea-cow, manatee); thick and conic in the dolphin, cylindrical in rodents and primates. The gland, which takes all intermediary forms between ball and point, has in the rhinoceros the shape of a gross fleur-de-lys. In the cats small spikes rise and point toward the base, and in agouti and gerboa there are holding flanges which grip the organs of the female.

The prong of many mammifers, a real member, is held

up by an interior bone, formed at the cost of the conjunctive partition which separates the two hollow chambers. This penial bone is found in many quadrumanes, chimpanzees, orang-outangs, most carnivora, dogs, wolves, felines, martin, otter, badger, among rodents, beaver, seal, and cetaceous animals; it is lacking in ruminants, pachyderms, insectivora, toothless animals. In man one sometimes finds a trace of it in the form of a slender prismatic cartilage. In the enormous penis of the whale it resembles a bell-clapper. The penial bone diminishes the erectile capacity of the prong in stopping the development of the hollow chambers, but it assures the rigidity of the member, obtained in the other penial type by the inflow of blood which causes the swelling. Man ought to have the penial bone; he has lost it in the course of ages, and this is doubtless fortunate, for a permanent rigidity, or one too easily obtained would have increased, to madness, the salacity of his species. It is perhaps for this reason that great apes are rare, although they are strong and agile. This view would be confirmed if the penial cartilage were found regularly in very lustful men or with a certain frequency among human races most addicted to eroticism.

The penis is found in woman in the form of clitoris. This is almost as voluminous as a true penis in quadrumanes; it is atrophied in other species. It varies individually in women, certain of them being in this respect quadrumanes. Sometimes the clitoris is pierced for the passage of the urethra (certain apes and the mole); a slight trace of this meatus is seen at the head of the woman's clitoris. In species whose males possess a

penial bone the female has often a clitoridian bone; nothing more clearly affirms the parallelism of these two organs, whereof one serves only for pleasure, after having been, perhaps in a long distant era, when man romped among marine invertebrates, a real instrument of fecundation. The greater labia, limiting the general orifice of the vulva, exist only in woman and, less markedly, in the female orang-outang. Circular in rodents, transversal in the unique case of the hyena, a heteroclite animal, the vulva is longitudinal in all other mammifers. Completely imperforate in the mole the vagina is more or less closed by a membrane, which the male penis tears in first encounter, in women, and several quadrumanes, certain small monkeys, the marmoset, certain carnivora, the bear, hyena, white-bellied seal, the daman (nailed); it is replaced in dog, cat, ruminants by an annular gripping between the vagina and the vestibule. The maidenhead is, therefore, not peculiar to human virgins, and there is no glory in a privilege which one shares with the marmoset.

Menstruation is found in quadrumanes, in bats; other female mammals show an emission of blood, which is, however, limited to the rutting season. The position of teats is variable, as also their number, they are in the groin in ruminants, solipedes, cetaces; ventral in dogs, pigs; pectoral and always two in nearly all primates, chiroptera, elephants, and sirenians, who for this reason, doubtless, reminded the sailors of the ancient world of their women.

Other particularities and correspondences are examined in the next chapter which deals with the mechanism of

love, and the method used by divers animals to make use of their organs according to the commandment of nature. There remain for consideration the lesser mammals and other vertebrates whose fecundatory instruments resemble those of mammifera.

In man and other placentaires, the forked prong is a teratological fact only encountered in incomplete double monsters. It is, on the contrary, the most general form among marsupials. A double vagina corresponds to this penis, double at least from the gland, thus in kangaroo and opossum. This original biparity is found regularly in the uterus of certain placentaires, hares, rats, bats, carnivora. The uterus of marsupials is simple without narrowing of the throat. One knows that their young stay there but a short time, that they are born not as fœtus but as germs, and complete their development in the marsupial pouch. An opossum, destined to attain about the size of a cat, is at birth about bean-size. These animals, therefore, differ profoundly from other mammifera.

Some reptiles, like crocodiles and most chelonians, have only a simple prong; some tortoises have a forked tip to the penis, it is many-branched in the trionix, carnivorous tortoise rightly called ferocious. The saurians and ophidians can deploy outside the cloaca two erectile prongs; in saurians, lizards, they are short, round and bristle with prickles. The females have no clitoris save when the male has a single prong; at least the clitoris is only well constituted in crocodilians and chelonians.

Copulation is unknown to batrachians, whose contact

is nevertheless very close; it is unknown to most fish, whose amours are without even contact. Certain selacians however (dogfish, skates), and perhaps also one or two teleostians (bony fish), and the lamprey, have a copulating organ which really enters the organ of the female.

The birds which have a penis or an erectile and retractile tubercle which serves, are the ostrich, the cassowary, the duck, the swan, the goose, the bustard, the mandou and certain neighbouring species; their hens have a clitoridian organ. The ostrich has a true prong, five or six inches in length, cut by a groove which serves as conduit for the seminal liquor; it is enormous in erection and tongue-shaped. The ostrich hen has a clitoris and coition occurs exactly as among mammals. The swan and duck are also very well provided with an erectile tubercle suited for copulation, and this explains at once the story of Leda, the libidinous reputation of the duck, and his exploits in the barn-yards, veritable abbeys of Thélème.

One can not here describe the copulative organs of arthropodes, comprising insects properly so-called. Enough to note that, however varied their forms, they behave very much as those of superior mammifers and are composed of two essential parts, the penis, sheathed in a penial scabbard, and the vagina, prolonged by the copulative pouch which receives the penis. Fish and birds, lacking external apparatus are reduced to methods which will be later examined. Hermaphrodite mollusks, with a marvellously complicated sexual apparatus, ought

also to be studied separately. Finally, the amorous habits of insects form a series of illustrative chapters.

From here, taking count only of exterior male organs or of organs which, internal when at rest, emerge at the moment of coïtion, one may attempt a vague and new classification of animal series.

1. Presence of penis, or of an erectile copulating tubercle: placentary mammals from man to marsupials exclusively; certain runners and palmipedes; crocodilians, chelonians, certain selacians, arthropodes, the rotifera.

2. Presence of a forked penis: marsupials, saurians, chelonians; scorpionides.

3. Disjunction of the secreting apparatus from the copulating apparatus: spiders, dragon-flies.

4. Absence of penis, copulation by contact: monotremes (ornithoryncus), birds, batrachians, crustaceans.

5. No copulation; exterior fecundation of eggs: fish, echinoderms.

6. Indirect transmission of sperm with or without contact (by the spermatophore): cephalopodes, orthoptera.

7. Hermaphrodism: mollusks, tuniciers, worms.

8. Monagamous reproduction: protozoaires, and certain of the last metazoaires.

One needs many discriminations and exceptions to make this table more precise. It is however, not untrue, although incomplete and lacking nuances, and it permits one to see: that the separation of sexes by well characterized copulating apparatus is not a sign of animal superiority, although it is found among the most gifted animals; that birds with their genital system merely

sketched in, seem to represent a type elevated in nature by the simplicity of organs and it means: that the sexes in animals who are without copulation either profound or superficial, tend, as in fish, to remain without difference; that all other modes of copulation are attributed exclusively to inferior species; that hermaphrodism was but a trial limited to a category of creatures lacking everything not exclusively designed for the process of reproduction; that the absence of sex characterizes only the earliest forms of life.

If one considers no longer the mode of copulation but the apparatus itself, with the male part, penis, and the female part, vagina, one sees clearly that these extremely particular organs are hardly found well designed save in two great branchings where the intelligence is most developed: mammifera and the arthropodes. There might be, perhaps, a certain correlation between complete and profound copulation and the development of the brain.

cede to them by necessity, in the absence of females. Sénancour has written wise and bold pages upon these practices among humans.

Sexual ethnography hardly exists. The scattered data on this subject, though extremely important, have not been co-ordinated. That would be a small matter. They have not even been verified. One knows nothing of coital practices save what life teaches one, questions of this sort being difficult to ask, and answers being always equivocal. There is here an entire science which has been corrupted by Christian prudery. An order was issued long ago and is still obeyed; one has concealed all that unites, sexually, man and animal, everything that proves the unity of origin for all that lives and feels. Physicians who have studied this question have known only the abnormal, the malady: it would be imprudent to base conclusions on general practices from their observations. The best source, at least for Europeans, is still the casuist writings. From the enumeration of sins against chastity gathered by professional confessors, one could, after some study, deduce the secret sexual habits of civilized humanity. But one must take care not to retain either the old idea of sin, or the idea of the same under modern cloak, of fault, crime or error. Practices common to an entire ethnic group can not be judged to be other than normal, it matters little whether they have been stigmatized by the apologists of right living. What is good is what is and what will continue to be. It is known that bimanes and quadrumanes are very libertine, and that this is in accord with their physical suppleness and their intelligence. It is a fact undeniable and insurmountable, even

if annoying. The human couple has drawn from this tendency a thousand erotic fantasies, which, in being disciplined have ended in the creation of a veritable sexual method, be it disinterested pleasure, be it preservation against fecundity; is this of no importance? How can one lecture about depopulation if one lose sight of this primordial fact? What can normal or patriotic reasoning do against an instinct which has become or rebecome an intelligent and conscious practice, bound to what is deepest in human sensibility? It is very difficult, especially when dealing with man, to distinguish between normal and abnormal. What is the normal; what the natural? Nature ignores this adjective, and one has dragged out of her bosom many illusions, perhaps in irony, perhaps in ignorance.

It is not perhaps very useful to describe human cavalage, which is not strictly a cavalage, as the woman is attacked from the front. Veritable cavalage has been, as one knows, praised by Lucretius, although, it has, and this detracts nothing from its merits, an air frankly animal; it is the form of love called by the theologians *more bestiarum* and by Lucretius *more ferarum* which is the same thing:

> Et quibus ipsa modis tractetur blanda voluptas,
> Quoque permagni refert; nam more ferarum,
> Quadrupedumque magis ritu, plerumque putantur
> Concipere uxores, quia sic loca sumere possunt,
> Pectoribus positis, sublatis semina lumbis.

This mode, considered by Lucretius as the more favourable to fecundation, is that of most mammifers, of nearly all insects and of many animal families. Apes great and

small know no other. The architecture of their bodies would make face to face copulation very difficult. One must not forget that their upright position is never more than momentary, even in orangs and chimpanzees; they are not much better equilibrated than bears, much less so than kangaroos, marmosets [1] and squirrels; even when they stand up one feels that they have four feet. Love among them is not free from the seasons, and although they are libidinous all the year, they do not seem fit for generation save through the weeks of their rutting time: then their genital organs acquire a permanent rigidity; the udders of the females, ordinarily as small as those of the males, only swell during this period. There is, therefore, a vast difference, from the sexual standpoint, between man and the great apes, his anatomic neighbours. Man even in the humblest species has mastered love and made it his daily slave, at the same time that he has varied the accomplishments of his desire and made possible its renewal after brief interval. This domestication of love is an intellectual work, due to the richness and power of our nervous system, which is as capable of long silences as of long physiological discourses, of action and of reflection. The brain of man is an ingenious master which has managed, without possessing any very evident superiority, to get out of the other organs work of the most complicated sorts, and most finely-sharpened pleasures; its (the brain's) mastery is very feeble in quadrumanes and other animals; it is very strong in insects as will be explained in a following chapter.

[1] Here R. de G. uses the term *marmotte;* up to this the word I have translated marmoset has been ouistiti.

PHILOSOPHY OF LOVE

One need not wait for a minute description of the exterior love mechanism of all animal species. It would be long, difficult and boresome. A few characteristic examples will be enough. The duration of the coition is extremely variable, even in superior mammals. Very slow for dogs, coupling is but a thunderclap for the bull, the ram's is called the "lutte" (strife). The bull merely enters and leaves, and it is a spectacle for philosophers, for one understands immediately that what drives the fiery beast at his female is not the lure of a pleasure too swift to be deeply felt, but a force exterior to the individual although included in his organism. By its long grievous duration the coition of dogs leads to analogous reflections

> In triviis quum saepe canes discedere aventes
> Diversi cupidine summis ex viribus tendunt.
>
> —LUCRETIUS.

This is because the dog's penis contains a hollow bone giving passage to the urethra. Around this bone are gathered the erectile tissues whereof one, the node of the prong, swells disproportionately during coition and prevents the separation of the two animals after the act is accomplished. They remain a long time uncomfortable, not managing to free themselves until long after their desire has turned to disgust, grotesque and lamentable symbol of many a human liaison.

Our other familiar animal, the cat, is not more happy in his affections. His penis is indeed furnished with thorns, with horny papilla toward the tip, and the intromission as well as the separation is only accomplished

with groans. What one hears at night are not cries of voluptuousness but of suffering, the howlings of a beast whom nature has caught in the trap. This does not prevent the female from being very enterprising; responding to the cries of the pursuing male she excites him in a hundred ways, biting at neck and belly with an insistence which has, they say, provided a metaphor in the erotic vocabulary. Biting the neck is much more curious, as it is of a much less direct intention. Bitches also bite the neck of the dog in prelude. For near the neck is situated the bulb, original knot of nerves governing the secret parts and the genital region.

The pain which accompanies sexual acts ought to be differentiated, with precision, from passive suffering. It is very possible (women can testify to the fact) that sighs and even cries emitted at such time are the expression of a mixed sensation, wherein joy has almost as great a part as suffering. We must not judge feline exclamations from the shrillness of timbre; tortured by the male prong the she-cats howl, but they await the supreme benediction. The rigour of the first approaches is perhaps but the promise of deeper delights: at any rate some women have thought so.

One knows that a cat's tongue is rough: so is the tongue and all the mucous surfaces of negroes. This roughness of surface notably augments the genital pleasure, as men who have known negresses testify. It has been perfected. The Dyaks of Borneo pierce the extremity of the penis, through the navicular channel and fit into it a pin to both ends of which are attached tufts of stiff hair in the form of a brush. Before surrender the women by cer-

tain tricks and certain traditional gestures indicate the length of the brush desired. In Java one replaces this apparatus known as the ampallang, by a sheath of goat skin, more or less thick. In other countries there are incrustations of little pebbles, which give the gland the shape of an embossed mace; and these pebbles are sometimes replaced by tiny bells, so that the men make in running a sound like mules, and attentive women can judge their value according to the intensity of their sexual music. These customs, noted by de Paw among certain aborigines of America, have not been recently observed, doubtless because the Christian modesty of modern travellers has obliterated their eyes and ears at convenient moments. No custom is abolished save in the face of some other custom more useful to sensuality, and the imagination seems rather to advance than to recede in these matters. It is true that the inventors hide themselves, even in savage countries, sexual morality tending toward uniformity.

These artifices, which appear curious to us, have certainly been created at the instigation of women, since theirs is the profit of them. Males have submitted to them, happy no doubt to be delivered at the price of passing pain from the terrible lasciviousness of their females. Racked and flayed by such instruments the women ought, at least for a few days, to flee the male and brood in silence upon their luxurious memories. Chinese and Japs, whose women are likewise lascivious, are familiar with analogous means; to dominate their companions they have also invented ingenious onanist methods which give them time to attend to their own

and strong, when she has been fecundated, and when she must give birth and food to the posterity of her race. The male then becomes inert; equable sharing of the expense of forces, just division of labour. This passivity of the female element is found again in the very figuration of animality, formed by the egg and the spermatozoide. One sees the play under the microscope: the egg waits, solid as a fortress or as a woman whom many men look on and covet; the little animals begin their attack, they besiege the enclosure, they butt it with their heads; one of them breaks the wall, he enters, and as soon as his tad-pole tail passes the breach, the wound recloses. The entire activity of this embryonic female reduces itself to this gesture; the greater part of her great sisters know no other. Their free-will nearly always consists in this: they receive one among the arrivals, without one's being able to know very well whether the choice is psychological or mechanical.

The female waits, or flees, which is but another way of waiting, the active way; for not only *se cupit ante vidente* but she desires to be taken, she wishes to fulfill her destiny. It is doubtless for this reason that, in species where the male is feeble or timid, the female resigns herself to an aggression demanded by care for future generations. In short, two forces are present, the magnet and the needle. Usually the female is the magnet, sometimes she is the needle. These are details of mechanism which do not modify the general march of the machine to its goal. At the origin of all feeling there is a fact irreducible and incomprehensible in itself. Common reasoning starts from the feeling to explain the fact; this gives the absurd

result of making thought run in a set track, like a horse in a circus. Kantian ignorantism is the masterpiece of these training exercises, where, starting from the categoric stable the learned quadruped necessarily thither returns, having jumped through all the paper disks of scholastic reasoning. Observers of animal habits fall regularly into the prejudice of attributing, regularly, to beasts directive principles which only a long philosophic education and especially Christianity have rammed into restive human docility. Toussenel and Romanes are rarely superior to the possessors of a prodigious dog or miraculous cat: one must reject as apocryphal the anecdotes of animals' intelligence, and especially those boasting their sensibility, or celebrating their virtues; not that these are of necessity, inexact, but because the manner of interpreting them has vitiated, in principle, the manner of observation. One sole observer appears to me trustworthy in these matters, namely J. H. Fabre, the man who, since Réaumur, has penetrated furthest into the intimacy of insects, and whose work is veritably the creator, perhaps without his having suspected it, of a general psychology of animals.

The madness of attributing to beasts the intuitive knowledge of our moral catechism has created the legend of the elephant's sexual modesty. These chaste monsters hide, they say, to make love; animated by a wholly romantic sensibility, they can not give way to their feelings save in the mystery of the jungle, in the labyrinth of the virgin forests: that is why they have never been known to breed in captivity. Nothing is more idiotic; the elephant in the public garden or the circus is ready enough to make love, although with less enthusiasm than

in his native forest, as is the case with nearly all beasts newly captive. He breeds under man's eye with perfect indifference, and no showman can prevent the she-elephant, who is very lecherous, from manifesting with full voice her shameless desires. As her vulva opens not between her legs but toward the middle of her abdomen, Buffon believed that she had to lie on her back to receive the male. This is not so, but she has to make a particular gesture: she kneels.

Whales who are by far the greatest mammals, obey a special rite, imposed by their lack of members and the element in which they live; the two colossi heave over on their sides like sprung ships, and join obliquely, belly to belly. The male organ is enormous, even in the state of rest, six or eight feet long and fifteen or sixteen inches in circumference. The vulva of the female is longitudinal; near it is found the udder which projects greatly when she gives suck. This udder has ejectory power, the whale cub hooks on by his lips, and the milk is sent to him as from a pump, marvellous accommodation of organs to the necessities of the milieu.

Anatomy forces female seals and walruses to turn over to receive the male. In the specie commonly called the sea-lion, she seems according to observations perhaps too sketchy, to make the advances. The male being stretched out at rest she rolls before him, plagues him, while he grumbles. She succeeds in moving him, and they go to play in the water. On return the female lies on her back, the male who is much thicker and longer covers her, propping himself on his arms. The coupling lasts seven or eight minutes. The posture of female seals is

also that of hedgehogs, and truly the cavalage here must be particularly thorny. Despite his roof the male tortoise climbs onto the female and installs himself there, clinging to her shell with the nails of his forefeet; there he stays fifteen days having slowly introduced into her patient organs his long round prong, ending in a sort of pointed ball, pressing with all his strength the enormous clitoris of the female. We find ourselves far from mammifers and from the excitability of the bull; this coupling which lasts a whole season leads us toward the voluptuous laziness of disgusting and marvellous gasteropodes. According to tales which are, perhaps, not contradictory, crocodiles couple in the water, according to some, and on land according to others; in water laterally; on land, the female on her back. It is said to be the male who puts her on her back, and who, coition completed, helps her to right herself; charming spectacle, which I can not guarantee to be so, but which would improve our idea of the gallantry of these ancient divinities.

I don't know whether anyone has ever remarked that the caduceus of Mercury represents two serpents coupled. To describe the caduceus is to describe the love mechanism of ophidians. The bifurcated penis penetrates the vagina, the bodies interlace fold on fold while the two heads rise over the stiffened coils and look fixedly at each other, for a long time, eye gazing into eye.

Certain fish have penial organs; they can then realize true copulation; thus dog-fish, bounce, sharks, sea-hinds (*biches*). The males grip the females and hold them with hooks often formed at the expense of the abdominal fin, by cartilaginous pieces which penetrate the female

orifice and serve as slide to the penis. The male skate seizes the female, turns her over, clamps himself to her, belly to belly, holds her with his penial tentacles and finishes the coupling, releasing his seed which flows into the cloaca. The operation is repeated several times; separated by the emission of skatelets who are born alive, it continues until the female has discharged the greater part of her eggs.

PHILOSOPHY OF LOVE

CHAPTER X

MECHANISM OF LOVE

II. Copulation (continued).—Arthropodes.—Scorpions.—Large aquatic crustaceans.—Small crustaceans.—The hydrachne.— Scutilary.— Cockchafer.— Butterflies.— Flies, etc.—Variation of animals' sexual habits.

Among insects, batrachians, and mollusks one finds the most curious modes of fecundation and those furthest removed from the usual mechanism of mammals; before coming to that we will give a few examples, toward forming an idea of the sexual habits of various species chosen from the arthropodes. In scorpions, let us say, terrestrial representatives of aquatic crustaceans: the two sexes are identical, genital organs usually invisible, hidden between the abdomen and the cephalothorax, the front part of it where the head without neck is prolonged directly into the thorax. The male is provided with two rigid penes englobed in a sheath—double but forming a single canal; holding the female belly to belly he inserts them in the vulva, one branch bending to the left, the other to the right toward each of the two oviducts. Same mechanism in crustaceans, save in the rare cases when they are hermaphrodite. Lobsters, langousts, écrevisses, crabs, like the scorpion, couple in a manner singularly resembling that of humans. Curious spectacle, that of the hen lob-

ster attacked by the male, turned on her back, patiently permitting him to stretch over her, enlacing her claws and his pincers! Vision of a sabbat which Callot or Doré would only have painted in fear. Perhaps one would consider this before opening the armoured belly of these beasts who have bred their species among algæ, and in holes of the rocks? The genital glands of crustaceans are excellent; people gladly eat those of the sea-anemone; the only good part of these spiny animals. The males of the greater crustaceans have erectile ejectory canals, rising in the form of double prong between the forefeet; the females are correspondingly provided with two vulvæ opening in the third sternal segment, or at the base of the feet corresponding to this segment. Copulation is effected by quick acts, reiterated two or three times, lasting a quarter of an hour. The male of the fresh water prawn who swims leaning on his side, holds his female between his claws and progresses by bounds; she is much smaller than he is. Same mechanism in aselle and talitre or sea-flea.

There are many singularities in the sexual habits of small crustaceans, the male bopyre lives as parasite on the female, who is four or five times larger; oddity increased by the female herself being the parasite of the palemon. It is she who forms the little bloatedness which one notices, grayish when cooked, on the heads of shrimps, turned pink. Fishermen state that this spot is a small sole, but they also tell other yarns: for example, that anatifes, the peduncular mussels which one sees on drift-wood are the embryos of wild-ducks, and one noble

sailor has himself seen them taking flight.[1] The male linguatula is also smaller than the female, he has one testicle but two long copulating organs which simultaneously penetrate the female, ejaculating toward the two ovaries. Another small male is the hydrachne, water acarian, two or three times smaller than the female, he alone is provided with a tail at the end of which are his genital organs; the female's are formed by a papilla situated beneath the belly and marked by a white patch surrounding the sluice. The male swims, the female comes to meet him, lifts herself obliquely and brings her white spot into touch with her lover's caudal extremity, the junction is accomplished. One then sees the male drag along the kicking female; the coupling, with periods of rest, but without interruption of profound contact continues for several days.

With insects of superior talents it is, on the contrary, the female who carries off the male: the ant carries hers on her back, while he bends his abdomen into a bow toward her vulva; thus weighted, she flies, mounts, planes, then falls with him like a drop of water. He dies on the spot, the female gets up, returns to the nest, lays, before dying. The fêtes of the ant are of the whole ant hill at once, the fall of the lovers like a golden cascade, and the resurrection of the females gleams in the sun like a russet foam. The scutilary is an insect sometimes squarish or shield-shaped resembling the green

[1] The name of these cirripedes bears witness to this superstition: *anatife* is the abridgement of *anatifere*, duck-bearing, latin *anas, anatis*. "A tree equally marvelous, is that which produces barnacles, for the fruits of this tree change into birds." (Mandeville's Travels.)

wood louse, sometimes long and cylindrical with points and lines of all colours on its wings. One of them, scutiform, known as *lineata*, with red back and black stripes, is common on umbellifera. Copulation takes place end to end; one can see them thus, the female towing the smaller male from leaf to leaf, from umbel to umbel.[1] The forficula also couple end to end, fleas, whose male is smaller, couple belly to belly with feet enlaced; the position recalling that of dragon flies is more remarkable, in the louvette, a small insect which lives on broom, and readily throws itself upon man: the vulva is in fact, near the mouth.

Coleoptera are given to cavalage, of duration varying from ten hours to two days. The male cockchafer pursues the female with fervour, he is so ardent that he often mounts other males, deceived by the odour of rut floating in the air. He seizes the female and holds her clamped by his forelegs and genital hooks. The union continues a day and a night, finally the male, exhausted, falls over backward, and still hooked by the penial pincers, is dragged along on his back by the impassive female who moves on feeding, pulling him over the leaves until death detaches him; then she lays and dies in her turn. Butterflies are likewise very fervent, the males make veritable voyages in quest of females, as Fabre has proved. They often fly coupled, the stronger female easily carrying the

[1] This does not seem to be general. I have recently observed, on the umbels of wild carrots, numerous couples of scutilaries, proceeding by cavalage, the male inert, couched on the walking female, who started at the least alarm. Form narrow, almost cylindrical; colour: orange red, with two short black bands: strong sucker, long antennæ. Union lasting at least a day and a night.—R. de G.

male: it is a quite frequent sight in the country, these butterflies with four wings who roll, a little bewildered from flower to flower, drunken ships going where the sails bid them. With flies, feminism is brought frankly into the love mechanism. The females have the copulative apparatus; they force their oviduct, then a veritable prong, into the male's belly; it is the females who make the mastering gesture, the male merely grips this gimlet with the hooks which surround his genital fent. It is this same augur which the female uses to bore the wood, or earth or flesh where she deposits her eggs. The coupling is end to end, and one of the easiest to observe.

Here are enough examples to show what is permanent in the mechanism of true copulation, and what is variable in its exterior modes. Given the two chief pieces of the apparatus, the sword and the scabbard, nature, as one might say, leaves it to the imagination of each specie to decide the best manner of using them; all ways seem good if they fecundate. Nature has still more remarkable methods, for the sexual inventions of humanity are nearly all anterior or exterior to man. There is not one whose model, even perfected, is not offered him by the animals, by the most humble of animals.

If there is no general rule, if there is no one moral manner of fecundating a female, one must recognize that the same mode is fixed in the same specie, in the same genus or family. I do not think that anyone has observed variation in the sexual habits of an animal; yet acts of sheer disembarrassment being possible, one can not consider the love method as being rigorously fixed. It has

THE NATURAL

CHAPTER XI

THE MECHANISM OF LOVE

III. Of birds and fish.—Males without penis.—Coupling by simple contact.—Salacity of birds.—Copulation of batrachians: accoucheur toad, aquatic toad, earth toad, pipa toad.—Fœtal parasitism.—Chastity of fish.—Sexes separated in love.—Onanistic fecundation.—Cephalopodes, the spermatophore.

III. Of birds and fish. It is toward the middle of the second month that the separation of the cloaca into two regions is marked in the human fœtus: a partition is formed which will absolutely isolate the digestive channel from the uro-genital. The persistence of the cloaca is not a sign of primitivity, since one finds it in selacians, batrachians, reptiles, monotremes and birds. The uro-genital region of marsupials and of several rodents is submitted to a single sphincter, witness of original union.

The bird's cloaca is divided into three chambers, for the three functions, the outer orifice being necessarily unique, by definition. It is with this rudimentary apparatus that most birds turn to the pleasures of love. The male being wholly deprived of any erectile tissue, coition is by simple contact, a pressure, perhaps a rubbing; displeasing as the comparison may be, it is a play analogous to the mouth to mouth kiss, or, if one prefer,

to the pressing of two sapphists clasped vulva to vulva. Far from being a regression or a stop, it is perhaps a progress, the male at least gaining in security and vigour, being obliged to very little muscular development. The salacity of certain birds is well known, and one does not see that the absence of an exterior penis diminishes their ardour, or attenuates the pleasure which they find in these succinct contacts. Perhaps the direct genital pleasure is concentrated in a vascular papilla which swells a little at the moment of the approaches; this is very rudimentary, often unnoticeable but it seems to be an exciting organ, the producer of pleasure. The male mounts the female, holds her with feet and beak, the two cloaca are superposed, the sperm flows into the oviduct. One sees sparrows repeat the sexual act as often as twenty times, always with the same excitement, the same expression of contentment; the female tires first, and shows her impatience. Birds' habits are especially interesting in reason of the play with which they surround their love making, their parades, their combats; we will deal with this in later chapters.

Batrachians live for hardly anything save reproduction. Outside their season of love, they remain stupefied. The rut over-excites them, and these slow, frozen animals then show themselves ardent and implacable. The males fight for the possession of females; having seized a female, nothing will make the male let go. One has seen him stick to his post even after his hind legs were cut off, even after losing half his body. Yet the copulation is mere simulacrum, it takes place by simple contact in the absence of exterior organs, even in salamanders, despite

the pads which surround the cloaca, sketch of an apparatus which has remained extremely rudimentary, or possibly problematic. With anours, the male, smaller than the female, climbs on her back, passes his forefeet, his arms, under her armpits and remains skin to skin for a month, for two months. At the end of this time the pressed flanks of the female finally let fall the eggs, and he fecundates them as they fall. Such is the coupling of frogs, lasting from fifteen to twenty days. The male clambers onto the female, encircles her with his arms, crosses his hands over her breast, and holds her tightly embraced. He then remains immobile, in an ecstatic state, insensible to every external shock, to every wound. It would seem that the sole aim of this enlacing is to exercise a pressure on, or to cause an excitement in, the belly of the female and to make her deliver her eggs. She lays a thousand and the male sprays them with sperm as they pass.

All the anours (tailless batrachians) thus press their females like lemons; but the method of fecundating the eggs is quite variable. The mid-wife toad enlaced like the others, aids the emergence of the egg garland with his hind feet, he unrolls it grain by grain, with devotion, while the female, immobile emptier, lends herself willingly to this manœuvre, which she feels perhaps as a caress. The aquatic toad does not pull at the garland, he receives it in his paws, and when he has ten eggs or so, he sprinkles them, ejaculating with a movement of the flanks, which old Roesel[1] compares to that of a dog's in coition. As for the common land toad, whose note sounds like a

[1] In his "Historia Naturalis Ranarum," 1758, Bufo aquaticus.

pure crystal bell in calm of the evening, he waits until all the eggs have emerged, he arranges them in a heap, then excited by somersaults, he drenches the lot of them.

But no batrachian patience is as curious as that of the pipa toad. This is a hideous beast with small eyes, mouth surrounded with whisker-prickles, skin blackish green, full of warts and swellings. As the eggs are laid the male fecundates them, then taking them in his large webbed feet he spreads them out on the female's back. Around each egg there forms a little protective pustule, in which the young hatch. The female on whom a hatch commences offers the odd spectacle of a back whence, here and there, heads and feet are sprouting, or from which emerge little toads as if born of a paradox.[1] This formation is another proof that nature finds anything good which happens to attain her purpose, and that she cares only for the perpetuation of life. An incubatorial pocket was necessary, and she had forgotten it; no matter, the animal will make one for itself, at its own expense or at the expense of some other specie. The small pipas exercize a real parasitism, ordered by an absent-mindedness of nature. Whether the deposit of eggs be in the mother's back or in the tissue of some other animal the parasitism is no less evident, at most it is a question of degree. From this point of view it will be possible to consider the normal, internal evolution of sexual products as a parasitic evolution: the young of the mammal is a parasite of its mother, as the little ichneumon is a parasite of

[1] The back as gestative chamber is also found in woodlice, during one of their parthenogenetic phases, cf. Fabre "Souvenirs" VII, *les Pucerons du terebinthe.*

the caterpillar which serves it as uterus. Thus considered the notion of parasitism temporary or larval will disappear, or, rather, take a much greater extension, enveloping a considerable number of facts up till now separated in irreducible categories.

Fecundation by contact is very rare in fish, other than selacians. One hardly finds it save in lophobranchi and certain other viviparous fish, such as the blenny; the milt penetrates the female organs without copulation, and the eggs develop either in these organs, or in a pouch which the male carries under his belly, or even in the male's mouth, he having thus the virtue of assuring the birth of his offspring. The lophobranchi are wholly singular fish, one of them, the sea-horse, horse-headed ludion, gives a good idea of the family. Ordinary fish, such as one knows and eats, however M. de Lacépède may have classified them, are chaste animals void of all erotic fantasy.

What would appear to be the essential of pleasure is unknown to them. The males do not know possession nor the females surrender, no touch, no rubbings, no caress. The object of male desire is not the female but the eggs, he watches for those she is about to lay, he searches for those she has laid, an excitement quite like those produced by onanism, or which are engendered by fetishism in certain distorted minds and which operate at the sight of a slipper or ribbon, and die down, even to frigidity in the presence of the woman herself. The fish spends his semen on eggs which he finds floating and whose mother he has never seen. Often both eggs and male milt are left floating and meet only in the

chance of current and wave. Sometimes fish form a separate couple. The female swims up stream, stops over a grass or sand bottom, the male follows, obeying her gesture. Such habits have permitted people to breed fish with as great a certainty as they breed mushrooms, or more so. One takes a female swelled with eggs, squeezes her like an orange, then one empties a male of his milt, and nature takes charge of the rest. This procedure is not possible with certain species which act in concert, the male tilted onto his back, his genital orifice beneath that of the female, and ejaculating in time with her.

One knows that salmon swim up rivers in troops, often very dense, and into the branch streams and creeks, to lay their spawn in quiet, favorable nooks. Then they go down stream worn out by the dams and waterfalls which they have mounted by tail-swishing, and tired by their genital exercises. The column is often led by a female, the other females follow. Then swim the old males and lastly the young males. When the leaderess has found a suitable place, one of the roes stops, hollows the sand with her belly, leaves a packet of eggs in the hole, an old male drenches them at once, but the patriarch has been followed by young bucks who imitate him and fecundate the same eggs. Thus, with these fish there is a sort of school where the experienced teach the newcomers the procedure of fecundation. This mixture of eggs and semen from fish of all ages should be very favourable to the maintenance of a specific type, if the instability of milieu did not bring about the encounter of elements belonging to different neighbouring varieties:

arm enlarges in spatula, equips itself with a scourge, loses its suckers, and then when heavy with life as a ripe grape, it falls off, moves toward the female, comes alongside her belly, lodges in the palleal cavity and oozes out its seed into the organs where this will encounter the ovules. The male organ, here, appears as a temporary individual, a third being between father and mother, a messenger which carries the male genital treasure to the female. Neither of them knows the other. The male is wholly ignorant of the female for whom he detaches a limb, and the female knows nothing of her fecundator save the sole organ which fecundates. A little more complicated than that of the fish, this method is probably older, and seems possible only for aquatic animals. It is nevertheless that of many vegetables; this swimming arm recalls the winged grains of pollen which travel far from their pistils. Very few flowers can fecundate directly; nearly all have need of an intermediary, the wind, an insect, a bird. Nature had given wings to the phallus, ages before the imagination of Pompeian painters; she had thought of this, not for the pleasure of bashful women, but for the satisfaction of the most hideous beasts that people the ocean, cuttlefish, calamaries, octopi.

PHILOSOPHY OF LOVE

CHAPTER XII

THE MECHANISM OF LOVE

IV. Hermaphrodism.—Sexual life of oysters.—Gasteropodes.—The idea of reproduction and the idea of pleasure.—Mechanism of reciprocal reproduction: helices. —Spintrian habits.—Reflections on hermaphrodism.

Fish are the only vertebrates among whom one encounters hermaphrodism, either accidental: cyprins, herrings, scombers; or regular, sargue, sparaillon, seran. The myxines, very humble fish living as parasites, are alternative hermaphrodites, like oysters, like ascides; the genital gland functions first as testicle, then as ovary. The amphioxus, the bridge between invertebrates and vertebrates, is not hermaphrodite. The most strongly marked and most complicated forms of hermaphrodism are found in mollusks, and chiefly in gasteropodes. The alternate hermaphrodism of oysters produces effects which have been observed throughout antiquity. The advice to abstain from oysters during months lacking an "*r*" is based on a fact, and that fact sexual. From September to May, they are males, they are testicles, they elaborate sperm, they are good; from June to August the ovaries bourgeon, fill with eggs which turn whitish as they ripen, the oysters are females, they are bad; fecundation takes place at this time, the spermatozoides, born in the pre-

ceding period, finally perform their office. Superstitions before being rejected ought to be minutely observed and analysed, there is nearly always a kernel of truth in the gross envelope.

In the hermaphrodism of echinoderms, of fish, there is never auto-fecundation; either the sexual products meet outside the animals, which have neither copulating organs, nor a related genital life; it is a simple growth of germs; or, in a more complex phase the individuals have exterior male organs, and female organs, but they can not use them without the aid of another individual acting either as male, or as female. Here a new distinction is imposed: either the animal will be successively male, and then female; or it will be both at once. This union of the two sexes seems useless, according to human logic, when the two genital glands ripen at different seasons; one understands it better when the reciprocal fecundation is simultaneous, since this doubles the number of females and better assures the conservation of the specie. One must set aside the idea of pleasure. Apart from the fact that we can judge it only by a very distant and even dubious analogy considering the difference between the nervous systems of man and mollusk, one must set it aside as useless. Pleasure is a result not an aim. In most animal species coition is but a prelude to death, and often love and death work their supreme act in the same instant. Copulation of insects is suicide: would it be reasonable to consider it as produced by a desire to die? One must dissociate the idea of pleasure and the idea of love, if one wants to understand anything of the tragic movements which perpetually beget life at the

expense of life itself. Pleasure explains nothing. People might simply be commanded to die as a means of reproduction, they would obey with the same eagerness: this is observed even in humanity. Dithyrambs on pleasure would be misplaced apropos of the mutual ticklings of two snails on a vine-leaf; the subject is rather uncomfortable.

Note then two helices, both bisexual, fulfilling exactly the biblical phrase: "he created them male and female"; their genital organs are very well developed; the penis and oviduct opening into a vestibule, which in the act of copulation unbellies itself in part, so that the penis and vagina come in touch with the orifice; mutual intromission takes place. A third organ comes from the vestibule, without analogy in superior animals; it is a little pocket containing a small stiletto, a jewelled dagger; it is an excitative organ, the needle to prick up desires. These beasts who have prepared for love by fasting, by long rubbings, by whole days of close pressure, finally come to a decision, the swords come out of their scabbards, they conscientiously stab each other, this causes the penis to rise from its sheath; the double mating is accomplished.

There are species in which the position of the organs is such that the same individual can not be at the same time the female of the one for whom he acts as male, but he can at that moment serve as female to another male, who is female to a third, and so on. This explains the garlands of spintrian gasteropodes which one sees realizing innocently and according to the ineluctable wish of nature, carnal imaginations that have been the boast of

erotic humanity. Facing this light from animal habits, debauchery loses all character and all its tang, because it loses all immorality. Man, who unites in himself the aptitudes of all the animals, all their laborious instincts, all their industries, could not escape the heritage of their sexual methods; and there is no lewdness which has not its normal type in nature, somewhere.

Before leaving this repugnant milieu, one may still consider the leech. Hermaphrodite, they also practice reciprocal fecundation, but the position of their organs compels them to assume a peculiar position: the prong emerges from a pore near the mouth; the vagina is above the anus. The copulation of these wretched animals forms, therefore, a head-to-tail, the bocal sucker coinciding with the anal sucker.

Animals having both sexes, do not necessarily show sexual dimorphism. But neither this exact likeness of individuals, nor the double function with which they are charged, contradicts the general law which seems to wish that an individual should be due to elements coming from two different individuals. Autofecundation is exceptional, is very rare. Whether or no the individual possess the two genital glands, or one of them only, it needs a male, or an individual acting as male, and a female or an individual acting as female, to perpetuate life. Alternative hermaphrodism confirms these propositions, be it that the same gland transforms itself totally, turn by turn, into male principle, then into female principle; be it divided between a male half and a female half, these two halves ripen simultaneously or successively. When there is total or partial alternation, the male principle is ready

first, and waits: thus the aggressivity of the male, and the passivity of the female are visible in the most obscure manifestations of sexual life: the fundamental psychology of an ascide does not differ from that of an insect, or from that of a mammal.

means used to attain this fact should in no way be integrated in the finality itself. None of the procedures of generation, for example, bears the mark of necessity. It is not the ferocity of the she-spider which demands the sexual habit; the female mantis is still more savage, and mantis' method is cavalage. It does not seem as if anything in nature were ordered in view of some benefit; causes blindly engender causes; some maintain life, others force it to progress, others destroy it; we qualify them differently, according to the dictates of our sensibility, but they are non-qualifiable; they are movements, and nothing else. The pebble ricochets on the water, or it doesn't; this has no importance in itself, nothing more will come of it and nothing less. It is an image of supreme finality: after eight or ten bounds, life, like the pebble thrown by a child, will fall into the abyss, and with it all the good and evil, all facts, all ideas, and all things.

The idea of finality leads one back to the idea of fact, one is no longer tempted to attempt an explanation of nature. One would try modestly to reconstruct the chain of causes and, as a great number of rings will always be lacking, and as the absence of one ring alone would suffice to unhook the whole reasoning, one will do this in a piety tempered by scepticism.

The epirus, although a spider, is not an ill-conditioned beast; she is episcopal, she carries on her back a pretty white cross upside down. The large ones are the females; the very small ones, the males. Both hook their webs upon bushes, on shrubs, live without knowing each other until instinct has spoken. A day comes when the

male is restless; the gnats fail to satisfy him; he leaves, he abandons the home he will perhaps not see again. He is not, indeed, without misgivings, and fear is mingled with his desire, for the mistress he seeks is an ogress. Thus he prepares a way of retreat in case of combat; he stretches a thread from the female's web to a neighbouring branch, road of entry, gate of exit. Often, the instant he shows himself with his excited air, the female epirus leaps on him and eats him without formality. Is it ferocity? No, stupidity. She also is awaiting the male, but her attention is distraught between the coming of the caller and the coming of prey. The web has shaken, she leaps, enlaces, devours. Perhaps a second male if he attempt the pass, will be gladly received, the first sacrifice accomplished, perhaps this mistake, if it is one, will wake all the amorous attention of the distracted female? Ferocity, stupidity; there is another explanation which I will give later, apropos the mantis and the green grasshopper: it is very probable that the sacrifice of the male, or of a male, is absolutely necessary, and that it is a sexual rite. The little male approaches; if he is recognized, and if his coming coincides with the genital state of the female, she merely behaves like all the rest of her peers, and even though she be the larger and stronger, she flees; she lets herself, full of coquetry, slide down a thread; the male imitates the play, he descends, she mounts, he mounts, the acquaintance is made, they feel each other, they pat each other, the male fills his pump, the mating is accomplished. She is rapid, the male stays on guard, ready to flee at the least movement of his adversary; often he hasn't time. Scarcely has the fecun-

dation been finished when the ogress turns, leaping, and devours the suitor on the very spot of his amours. They say that she does not always wait for the end of the operation, and that preferring a good meal to a caress, she interrupts the performance with a slap of her mandibles. When the male has the luck to escape he disappears like a flash, goes down his thread like greased lightning. The argyronete uses manœuvres analogous, but even more curious. It is a water spider, which goes under water in an ingenious small diving-bell, a future nest. The female having made her diving-bell, the male, not daring to present himself thinks out the wheeze of making another bell just next that of the female. Then at a propitious moment he breaks through the dividing wall and profits by the surprise of his sudden entry. When it is a matter of not being eaten, all means are the right ones.

The tarantula, whose habits are far from gentle, is not cruel to her suitor. This monster who spins no web, spins out a long idyllic courtship. Extended preludes, puerile games, delicate caresses, lambkins' leapings. Finally the female surrenders fully. The male places her as he wishes, chooses for her the pose most pleasing to him, and lies obliquely against her, gently and repeatedly taking the sperm from his abdomen he insinuates each of his palpes, one after the other in the swollen vulva of the female. The break-away is sudden, a jump. Still more tender are the courtships of the leaping spider; they advance by little rushes, stop, watch, leap on their prey, insect or fly, or else float at the wind's will on the end of a long hanging web-thread. When male and female meet,

they approach, tap each other with forefeet and tentacles, separate, reapproach, recommence. After a thousand salutations, they pose head to head, the male climbs onto the female, stretches out until he reaches the abdomen. Then he lifts the extremity of it, applies his palpe to the vulva, and retires. The same act is begun again several times, the female is all compliance and offers no insult to her companion. There are certain exceptions to the method of spiders; the reapers, little balls mounted on immense legs, act by cavalage. The males have a retractile prong fixed by two ligaments to the abdomen, the female an oviduct which opens in vulva and spreads interiorly into a vast pouch, the resting place for the eggs. The male does not manage this female, a strong objector, save by seizing her mandibles with his pincers. Overcome by this bite she submits; the coupling lasts several seconds.

The dragon-fly, gracefully called "la demoiselle," is one of the finest insects in the world and certainly the most beautiful of those which fly in our climate; no soft butterfly colour is a match for the moving shimmer of its supple abdomen, and the bright head-colours as of steely-blue helmet. Description? It is difficult to find two alike: one has tawny body and dove-grey abdomen, spotted with yellow, and black feet, transparent wings with brown borders or nerve-veinings, or these in black and white; another has a yellow head, brown eyes, brown corselet veined in green, an abdomen touched with green and yellow, irised wings; another called "la Vierge" is gilded green, or blue with green shimmer, and spotless wings; another "la Jouvencelle" has wings thin to in-

visibility, is clothed in all shades, metallic blue, reddish-brown green, iris violet, tawny chrysanthemum, whatever her fundamental colour she encircles her elegant barrel with rings of black velvet. Naturalists divide these insects into libellules, æshnes, agrions; Fabricius disputes with Linnæus; peasants and children (for grown-ups despise nature) call them "demoiselles," "vierges" and "jouvencelles."[1] Some fly very high, in the trees, others along the streams and over pond edges; others over ferns, reeds, broom. I have passed days in the sun watching them, waiting to see their courtships; I have seen them, and know that Réaumur has not deceived us. It was on the surface of a pond among the border flowers, a morning of July, a flaming morning. The "Vierge," corselet of blue green, almost invisible wings, fluttered in great numbers, slowly, as if seriously; the hour of parade had arrived. And everywhere couples formed, rings of azure hung from the grass blades, trembled on leaves of the water-lentil, everywhere green arrows and blue arrows played at flight, and wing-brushing, at joining. The big eyes and strong head of the libellule give an air of gravity to the brilliancy of this spectacle.

The ejaculatory canal opens at the ninth ring of the abdomen, that is to say, at the point; the copulating apparatus is fixed at the second ring, that is, near the neck, and is composed of a penis, of hooks, and a reservoir: the male bending his long belly first fills the reservoir, then empties it into the organs of the female. For

[1] In America we have, so far as I know, only the terms "dragon fly" and "darning-needle," and for the larger ones "devil's darning-needle."—E. P.

a long time he pursues the desired mistress, plays with her, finally seizes her above the neck with the terminal pincers of his abdomen, then, turning like a serpent, he bends forward and continues to fly, a beast with four pairs of wings. In this attitude, the male, sure of himself, with the air of the hour's indifferent master, chases midges, visits flowers and the axilla of plants where the midges sleep, nabs them with his feet and puts them into his mouth. Finally the female accedes, bends downward her flexible abdomen and makes its orifice coincide with the male's pectoral penis: the two beastlets are but one splendid ring with a double cup, a ring trembling with life and with fire.

No gesture of love can be conceived more charming than that of the female slowly bending back her blue body, going half way toward her lover, who erect on his forefeet bears, with taut muscles, the full weight of the movement. It is so pure, so immaterial, one would say that two ideas joined in the limpidity of ineluctable thought.

who overwhelms him with her embrace; he gnaws her belly. The male disentangles himself and escapes, but a new assault masters him, he lies flat on his back. This time the female, lifted on her high legs, holds him belly to belly; she bends back the extremity of her abdomen; the victim does likewise; there is junction, and soon one sees something enormous issue from the convulsive flanks of the male, as if the animal were pushing out its entrails. "It is," continues the best observer (Fabre, Souvenirs VI), "an opaline leather bottle about the size and colour of a mistletoe berry," a bottle with four pockets at least, held together by feeble sutures. The female receives this leather bottle, or spermatophore, and carries it off glued to her belly. Having got over the thunder-clap, the male gets up, makes his toilet; the female browses as she walks. "From time to time she rises on her stilts, bends into a ring, seizes her opaline bundle in her mandibles, and chews it gently." She breaks off little pieces, chews them carefully, and swallows them. Thus while the fecundative particles are extravasated toward the eggs which they are to animate, the female devours the spermatic pouch. After having tasted it piece by piece she suddenly pulls it off, kneads it, swallows it whole. Not a scrap is lost; the place is clear, and the oviscapte is cleaned, washed, polished. The male has begun to sing again, during this meal, but it is not a love-song, he is about to die; he dies: passing near him at this moment, the female looks at him, smells him, takes a bite of his thigh.

Fabre was unable to see the mating of the green grasshopper, which takes place at night, but he observed the long preludes; he has seen the slow play of soft anten-

næ. The result of the coupling is the same as with all locustians; the female chews and swallows the genital ampulla. She is a terrible beast of prey who eats alive a huge cicada, who fearlessly sucks the entrails of a wriggling cockchafer. One can't say whether she eats her male, dead or alive; it is very probable for he is quite timid. Another dectic, the Alpine analote, has given Fabre the alarming spectacle: a male on his back, a female on his belly, the genital organs joining end to end in this single contact, and while she was receiving the fecundative caress, the enigmatic female, with the fore part of her body raised, was gnawing with little mouthfuls, another male held in her claws, impassive, his belly chewed open. The male analote is much smaller and weaker than the female; like his confrère the spider, he flees with greatest possible speed after the end of coition; he is very often nipped. In the case observed by Fabre, the meal was doubtless the end of a preceding amour: these locustians have the habit, rare among insects, of receiving several suitors. Truly this cannibal Marguerite de Bourgogne is a fine type of beast, and gives a fine spectacle, not of immorality, an empty term, but of the serenity of nature, which permits all things, wills all things, and for whom there are neither vices nor virtues, but only movements and chemic reactions.

The spermatophore of the ephippiger is enormous, nearly half the size of the animal. The nuptial feast is finished according to the same rite, and the female, having finished the leather-bottle spermatophore, adds thereto the poor emptied male. She does not even wait until he is dead; she chops him up, as he is dying, limb by limb:

having fecundated her with all his blood, he must feed her with all his flesh.

This male flesh is doubtless powerful comforting to the mother to be. Female mammifers, after delivery, devour the placenta. One has given different interpretations to this habitual act. Some see a precaution against enemies: it is necessary to obliterate traces of a condition which clearly shows that one is feeble, defenceless, surrounded by young, a tasty prey at the mercy of any tooth; others say it is a recuperation of energy. This latter opinion seems more likely, especially if one consider the habits of locustians. The spermatophore is indeed the preceding analogy to the placenta. On the other hand, fecundation, before being a specific act, belongs to the general phenomena of nutrition: it is the integration of one force in another force, and nothing more. The devouring of the male, partial or complete, represents, then, only the most primitive form of the union of cellules, this junction of two unities in one, which precedes the segmentation, feeds it, makes it possible during a limited time, after which a new conjunction is necessary. If the actual acts are only a survival, if they have lasted after their utility has disappeared, it is another question, and one which I leave again to experimenters. It will be enough for me if I have gained acceptance of the general principle that animals' acts, whatever they may be, can not be understood unless one strip them of the sentimental qualifications beneath which ignorant humanity has covered them, corrupting them with providential finalism.

While fully recognizing the immense social value of prejudices, analysis should be permitted to excoriate

them and to grind them. Nothing appears more clear than maternal love, and nothing is more widespread throughout all nature: yet nothing gives a falser interpretation of the acts which these two words pretend to explain. One makes a virtue of it, that is to say, in the Christian sense, a voluntary act; one seems to think that it depends on the mother to love or not to love her children, and one considers culpable those who relax or forget their motherly cares. Like generation, motherly love is a commandment; it is the second condition of the perpetuity of life. Mothers sometimes are without it; some mothers also are sterile: the will intervenes neither in one case nor in the other. As the rest of nature, as ourselves, animals live submitted to necessity, they do what they ought to do, so far as their organs permit them. The mantis who eats her husband is an excellent egg-layer who prepares, passionately, the future of her progeny.

After Fabre's observations of couples of these insects caged, the female much stronger than the male mantes, are the predatory ones, who do combat for love. The combats are deadly, the vanquished female is eaten at once. The male is bashful. At the moment of desire he limits himself to posing, to making sheep's eyes, which the female seems to consider with indifference or disdain. Tired of parade, he finally decides, and with spread wings, leaps trembling upon the back of the ogress. The mating lasts five or six hours; when the knot is loosed, the suitor is, regularly, eaten. The terrible female is polyandrous. Other insects refuse the male when their ovaries have been fecundated, the mantis accepts two, three, four, up to seven; and Bluebeard, eats them regularly after the

act is accomplished. Fabre has seen better. The mantis is almost the only insect with a neck; the head does not join the thorax immediately, the neck is long and flexible, bending in all directions. Thus, while the male is enlacing and fecundating her, the female will turn her head back and calmly eat her companion in pleasure. Here is one headless, another is gone up to the corsage, and his remains still clutch the female who is thus devouring him at both ends, getting from her spouse simultaneously the pleasures *ac mensa ac thoro,* both bed and board from her husband. The double pleasure only ends when the cannibal reaches the belly: the male then falls in shreds and the female finishes him on the ground. Poiret has witnessed a scene perhaps even more extraordinary. A male leaps on a female and is going to couple. The female turns her head, stares at the intruder, and decapitates him with a blow of her jaw-foot, a marvellous toothed-scythe. Without disconcertion the male, wedges up, spreads himself, makes love as if nothing abnormal had happened. The mating took place, and the female had the patience to wait for the end of the operation before finishing her wedding breakfast.

The headless nuptials are explained by the fact that the insects' brain does not seem to have unique control of its movements; these animals can live without the cervical ganglion. A headless grasshopper will still lift his bruised foot to his mouth, after three hours, with the movement familiar to him in his complete condition.

The small mantis, or colourless mantis, is almost as fierce as her great sister, the religious mantis; but the *empuse,* a kindred specie, seems peaceful.

PHILOSOPHY OF LOVE

CHAPTER XV

THE SEXUAL PARADE

Universality of the caress, of amorous preludes.—Their rôle in fecundation.—Sexual games of birds.—How cantharides caress.—Males' combats.—Pretended combats of birds.—Dance of the tetras.—Gardener bird.—His country house.—His taste for flowers.—Reflections on the origin of his art.—Combats of crickets.—Parade of butterflies.—Sexual sense of orientation.—The great-peacock moth.—Animals' submission to orders of Nature.—Transmutation of physical values.—Rutting calendar.

One has convinced oneself in the preceding chapters that the games of love, preludes, caresses, combats are in no way peculiar to the human race. On nearly all rungs of the animal ladder, or rather on all the branches of the animal fan, the male is the same, the female is the same. It is always the equation given in the intimate mechanism of union of animalcule and ovule: a fortress toward which *amans volat currit ac lætatur*. The whole passage of the *Imitatio* (L. III, chap. iv, 4) is a marvellous psychological presentation of love in nature, of sexual attraction as it is felt throughout the whole series of creatures. The besieger must enter the fortress; he uses violence, sometimes gentle violence; more often trickery, the caress.

female starts eating again. The calm is short; the male's follies recommence. Then there is another manœuvre, with the fold of his legs and tarses, he seizes the female's antennæ, forces her to lift her head, at the same time redoubling the lashing of her flanks. New pose; new start of the flagellation: finally the female opens. The coupling lasts a day and a night, after which the male falls, but remains knotted to the female who drags him from leaf to leaf, the penis attached to her organs. Sometimes he also takes a mouthful here and there; when he drops off it is to die. The female lays the eggs and dies in her turn. The cerocome, an insect kin to the cantharide, has analogous habits, but the female is even colder, and the male is obliged to tap more than one before getting an answer. In vain he beats the sides of his chosen companion with his paws, she remains insensible, inert. This action, moreover, has the full appearance of having passed to a state of mania in the male muscles, so much so that, in default of females, males mount and pummel each other. As soon as a male is charged by another male he takes the female attitude and remains quiet; one sees pyramids of three or four males; in which case the top one is the only one wildly waving his feet; the others remain immobile, as if their position of mounts transformed them into passive animals: probably because their muscles are pinned down. (For these two observations see Fabre, *"Souvenirs,"* vol. II. *Cérocomes, mylabres et zonitis.*)

It is rare for a female to assist the male in his work, but there remains the obstacle of the other males. Contrary to what one might think, there is no relation be-

tween the male's social character and his amorous character. Ferocious animals show themselves at the moment of love-making much more placid than gentle or even timid animals. The scary rabbit is an impetuous, tyrannous and jealous lover. If the female does not accede to his first desire, he rages. She is, moreover, very lascivious and gestation in no way interrupts her amours. The hare, who does not pass for audacious, is an ardent and heady lover; he fights furiously with his peers for the possession of a female. They are animals very well equipped for love, the penis greatly developed, clitoris almost as large. The males make real voyages, run for entire nights in search of the doe-hare who is sedentary: like the doe-rabbit, she never refuses, even when pregnant.

Martins, polecats, sables, rats fight violently during the rutting season. Rats accompany their fights with sharp cries. Stags and wildboars, and a great number of other species fight to the death for the possession of females; a practice not unknown to humanity. Even heavy tortoises feel exasperation from love; the defeated male is tilted onto his back.

Finer, destined perhaps for a superior and charming civilization, the birds like combat; sometimes the duel is serious, as in gallinaceæ, cock-fights, often it is a courtesy, a mimicry. The female of the rock-cock of Brazil is tawny and without beauty, the male is yellow-orange, with crest bordered in deep red, the long wing feathers and tail feathers are red-brown. One sees the females ranged in a circle as a crowd about jugglers, the males are strutting, cutting capers, moving their colour-shot

feathers, getting themselves admired and desired. From time to time a female admits that she is moved, a couple is formed. But the tetras, heather-cocks of North America, have still more curious customs. Their fights have become exactly what they have with us, that is, dances. It is no longer the tourney, it is the tour-de-valse. What completes the proof that these parades are a survival, a transformation, is that the males, being amused by them, perform them not only before but after coupling. They even practice them for diversion while the females are sitting on the eggs, absorbed in maternal duty. Travellers thus describe the tetras' dance (Milton and Cheaddle, "Atlantic to Pacific," p. 171 of the French translation): "They gather, twenty or thirty in a chosen place, and begin to dance like mad. Opening their wings, they draw together their feet, like men doing the *danse du sac*. Then they advance toward each other, do a waltz turn, pass to a second partner, and so on. This contre-danse of prairie chickens is very amusing. They become so absorbed in it that one can approach quite near."

Birds of Australia and New Guinea [1] make love with a charming ceremony. To attract his mistress the male makes a veritable country-house, or, if he is less skilful, a rustic bower of greenery. He plants rushes, green sprigs, for he is small, about the size of a blackbird; he bends them into a vault, often a metre long. He strews the floor with leaves, flowers, red fruits, white

[1] One has the unpronounceable name, savants designating it by the jumble of letters: Ptilinorhynches. The other is called the "gardener."

bits of bone, bright pebbles, bits of metal, jewels stolen in the neighbourhood. They say that when Australians miss a ring or a pair of scissors, they search these green tents. Our magpie shows a certain taste for bright objects: people tell tales about him. The "gardener-bird" of New Guinea is still more ingenious, to such a degree that his work is mistaken for human work and people are deceived thereby. With his beak and claws he manages as well and better than peasants, often showing a decorative taste which they lack. People search for the "origin of art": there you have it, in the sexual game of a bird. Our æsthetic manifestations are but a development of this same instinct to please which, in one specie over-excites the male, in another moves the female. If there is a surplus it will be spent aimlessly, for pure pleasure: that is human art; its origin is that of the art of birds and insects.

The *Grande Encyclopédie* has given a picture of the gardener-bird's pleasure house. He is called in most scholarly parlance the *Amblyornis inornata,* because he is lacking in personal beauty. One would take his house for the work of some intelligent delicate pygmy. We find the description of it, after the Italian traveller M. O. Beccari[1] "In crossing a magnificent forest M. Beccari found himself suddenly in the presence of a little conical cabin, in front of which was a lawn strewn with flowers; he at once recognized the sort of hut which M. Bruijn's huntsmen had described to him as the work of a dark

[1] The title of his study is curious "Les Cabanes et les jardins de l'Amblyornis." (Annales du Musée d'histoire naturelle de Gênes, 1876).

bird somewhat larger than a blackbird. He made a very exact sketch of it, and verifying the native's tales by his own observation, he found out how the bird makes this building which is not so much a nest as a pleasure house. The amblyornis chooses a little clearing with unbroken lawn and a small tree in the middle. Around this tree or bush which serves as axis, the bird places a little moss, then he plants slantwise the branches of a plant which will continue to grow for some time; juxtaposition of branches form the inclined walls of the hut. On one side they are left open to make a doorway, before which is the garden whose elements are gathered with difficulty, tuft by tuft, at some distance. After having carefully cleaned the lawn, the amblyornis sows it with flowers and fruits which he collects in the neighbourhood, and which he renews from time to time." This primitive gardener belongs to the bird of paradise family, remarkable for the beauty of their plumage. It seems that not being able to dress himself, he has exteriorized his instinct. According to travellers, these cabins are true houses of rendezvous, the country-boxes of the seventeenth century, the "follies" of the XVIIIth. The gallant bird ornaments it with everything that might please the invited female; if she is satisfied, it is the abode of love, after having been that of declarations. I do not know whether these oddities have been given the importance which they should have been, in the history of birds and of humanity. The scholar, the only person knowing such details, usually fails utterly to understand them. One savant whom I read, thinks of the thieving magpie, and adds, these traits which are common

to them ally them closely to birds of paradise and corvida. Doubtless, but that is not very important. The grave fact is the gathering of the first flower. The useful fact explains animality; the useless fact explains man. Now, it is of capital importance to show that the useless fact is not peculiar to man alone.

Crickets also have courting fights, but perhaps for a different reason: the feebleness of their offensive weapons, and the solidity of their armour. There is, however, a winner and loser. The loser decamps, the conqueror sings. Then he shines himself, stamps, seems nervous. Fabre says that emotion often renders him mute; his elytra (wing-shells) shake without giving a sound. The female cricket, witness of the duel, runs to hide under a leaf as soon as it is over. "She draws back the curtain a little, and looks out, and wants to be seen." After this play, she shows herself completely, the cricket rushes forward, makes a half-turn, rears up and slides under her belly. The work finished, he gets away as fast as possible, for we are before an enigmatic orthopter, the female is quite ready to eat him. It is the male's song which attracts the female cricket. When she hears it, she listens, takes her bearings, obeys the call. It is the same with cicadas, even though the two sexes usually live side by side. By imitating the sound of the male, one can deceive the females and make them come to one.

Sometimes sight, sometimes smell guides the male. Many hymenoptera, furnished with a powerful visual organ keep watch for the females, spying the vicinity. Thus also many day butterflies. When the male notices

One would say that at this point they should have used another sense, perhaps sight, despite their being crepuscular creatures, or that the cage bothered them. Perhaps also it is the custom for the female to come and play before them? It is, in any case, evident that sense of smell plays an important rôle; the mystery would not be less great if one supposed the bringing into play of a special sense, that of sexual orientation. Fabre has obtained equal success with the female of a very rare butterfly, the oak bombyx, or banded minime: in one morning sixty males arrived, turning about the prisoner. One has observed analogous if not identical things in certain serpents, in mammifera: everyone has seen dogs in the country, drawn by a female in heat, coming from a considerable distance, nearly a league, without one's being able to say how their organism had got the news.

Explanations are vain in these matters. They divert the curiosity without satisfying the reason. What one sees clearly is a necessity: the act must be accomplished, to this end, all obstacles, whatever they are, will be overcome. Neither distance, nor the difficulty of the voyage, nor the danger of the approach can drive back the instinct. In man, who has sometimes the power to escape the sexual commandments, disobedience may have happy results. Chastity, as a transmuter, may change unused sexual energy into intellectual or social energy; in animals this transmutation of physical values is impossible. The compass needle remains in one immutable position, obedience is unescapable. That is why there is so deep a rumble in nature when the spring orders are posted. Vegetable flowers are not the only ones to open:

sexes of flesh also flower. Birds, fish take on new and more vivid colours. There are songs, plays, pilgrimages. Salmon who live quietly at the river-mouths, must gather, depart, climb the streams, pass weirs, scrabble against rocks which form the dams and cataracts, wear themselves out leaping as arrows against all human and natural obstacles. Males and females arrive worn out at the end of their journey, the *frayère* of fine sand where they are to lay their eggs, and the males heroically to spend the milt distilled from their blood.

Spring is not the only rutting season. Love's calendar covers the year. In winter, wolves and foxes; in spring, the birds and fish; in summer, insects and many mammals; in autumn the deer. Winter is often the season chosen by polar animals; the sable couples in January; the ermine in March; the glutton, at the beginning and end of winter. Domestic animals have often several seasons; for the dog, cat and house-birds, spring and autumn. One finds young otters at any time. Most insects die after mating; but not all hemiptera, nor the queen bee, nor certain coleoptera, nor certain flies. The stag and the stallion empty themselves, but not the ram, nor the bull nor the he-goat. The duration of pregnancy in placentaires seems to have some relation to the size of the animal; mare, eleven to twelve months; ass, twelve months and a half; cow, doe, nine months; sheep, goat, wolf, vixen, five months; sow, four months; bitch, two months; cat, six weeks; rabbit, one month.

There are oddities: fecundated in August, the roe is not delivered until seven and a half months later, the embryo remaining a long time stationary, and waiting for the

spring to start again. In a she-bat ovulation does not take place until the end of winter, although she has received the male in the autumn: females caught during hibernation have the vagina swollen with inert sperm which does not act until the spring waking.

PHILOSOPHY OF LOVE

CHAPTER XVI

POLYGAMY

Rarity of monogamy.—Taste for change in animals.—Rôles of monogamy and polygamy in the stability or instability of specific types.—Strife of the couple against polygamy.—Couples among insects.—Among fish, batrachians, saurians.—Monogamy of pigeons, of nightingales.—Monogamy in carnivora, in rodents.—Habits of the rabbit.—The ichneumon.—Unknown causes of polygamy.—Rarity and superabundance of males.—Polygamy in insects.—In fish.—In gallinaceæ, in web-footed birds.—In herbivora.—The antelope's harem.—Human polygamy.—How it tempers the couple among civilized races.

THERE are no monogamous animals save those which love only once during their lifetime. Exceptions to this rule have not sufficient constancy to be erected into a counter-rule. There are monogamists in fact, there are none of necessity, from the time an animal lives long enough to commit the reproductive act several times. Free female mammals nearly always flee the male who has once served them, they need a new one. A bitch does not receive last season's dog save in direst extremity. This appears to me to be the struggle of the specie against variety. The couple is the maker of varieties. Polygamy

drags them back to the general type of the specie. Individuals of a specie frankly polygamous should present a very great similarity; if the species incline toward a certain monogamy, the dissemblances become more numerous. It is not an illusion which makes us recognize in human races almost monogamous, a lesser uniformity of type than in polygamous societies or those given over to promiscuity, or among animal species. The example of the dog seems the worst that one could have chosen. It isn't, it is the best, considering that in receiving successively individuals of different variety, the bitch tends to produce individuals not of a specialized breed, but on the contrary of a type where several breeds will be mixed, individuals which in crossing and recrossing in their turn, will end, if the dogs live in a free state, in forming one single specie. Sexual liberty tends to establish uniformity of type; monogamy strives against this tendency and maintains diversity.[1] Another consequence of this manner of seeing is that one must consider monogamy as favourable to intellectual development, intelligence being a differentiation which accomplishes itself more often, in proportion as there are individuals and groups who differ physically. Physical uniformity engenders uniformity of sensibility, thence of intelligence; this does not need to be explained; now intelligences count, and mark only their differences; uniform, they are as if they were not; impotent to hook themselves one onto the other, to react against each other, lacking asper-

[1] That is to say in the eye of some imaginary divinity who might be supposed to regard humanity, or even the slower mammals from a timeless or say five century altitude.—Translator's note.

ities, lacking contrary currents. This is the flock, in which each member makes the same gesture of flight, of biting, or of roaring.

Neither the conditions of absolute monogamy, nor those of absolute promiscuity seem to be found at present in humanity, nor among animals; but one sees the couple, in several animal and human species, either in state of tendency, or in state of habit. More often, especially among insects, the father, even if he survives it a little while, remains indifferent, to the consequences of the genital act. At other times, the fights between males so reduce their number that a sole male remains the master and servant of a great number of females. So one must distinguish between true, and successive polygamy; between the monogamy of one season, and that of an entire lifetime; and finally one must set apart those animals who make love only once, or during one season which is followed by death. These different varieties and nuances demand methodic classification. It would be a long work, and would perhaps not attain true exactitude, for in animals, as in man, one must count with caprice in sexual matters: when a faithful dove is tired of her lover, she takes flight, and soon forms a new couple with an adulterous male. The couple is natural, but the permanent couple is not. Man has never bent to it, save with difficulty, even though it be one of the principal conditions of his superiority.

The breasts of the male do not seem to prove the primordiality of the couple in mammals. Although there are veridic examples of the male's having given suck, it is difficult to consider the male udder as destined for

a real rôle, or for an emergency milking.[1] This replacement has been too rarely observed for one to use it as a basis of argument. Embryology gives a good explanation of the existence of this useless organ. An useless instrument is, moreover, quite as frequent in nature as the absence of a useful instrument. Perfect concordance of organ and act is rare. In the case of insects who live but for one love-season, sometimes for two real seasons if they can benumb themselves for the winter, polygamy is nearly always the consequence of the rarity of males, or the superabundance of females. Space is too vast, their food too abundant for there to be truly deadly combats between males. Moreover, their love accomplished, the minuscule folk ask only to die, the couple is formed only for the actual time of fecundation, the two animals at once resume their liberty, that is for the female to deliver her eggs, and for the male to languish, and sometimes to cast a final song to the winds. There are exceptions to this rule, but if one looks upon the exceptions with the same gaze as on the rule, one would see in nature only what one sees on the surface of a river, vague movements and passing shadows. To conceive some reality, one must conceive a rule, first, as an instrument of vision and of measure. With most insects the male does nothing but live; he deposits his seed in the female receptacle, flies on, vanishes. He does not share any of the labours preparatory to laying. Alone the female sphex engages

[1] One believes nevertheless that the male bat suckles one of the two young that the couple regularly produces. But these animals are so odd and so heteroclite that this example, if it is authentic, would not be a decisive argument.

in her terrible and clever strife with the cricket, whom she paralyzes with three stabs of her dagger in his three moto-nervous centres; alone she hollows the oblique burrow at the bottom of which live her larvæ; alone she adorns it, fills it with provisions, closes it. Alone the female cerceris heaps up in the deep gallery the stunned weevils and burn-cows, fruit of her excavations, larder for her progeny. Alone the she-osmie, she-wasp, she-philanthe—one would have to cite nearly all the hymenoptera. One understands better, when the insect deposits her eggs by chance, without prefatory manœuvres, or by special instruments, that the male co-operation is lacking; only the female cicada can sink her clever burrow in the olive bark.

There are however couples among insects. Among coleoptera there are the "purse-maker," the necrophore. Stercorian geotrupes, lunar copris, onitis bison, sisyphus, work soberly side by side preparing the larder for their coming families. In these cases, the male seems master, he directs the manœuvres in the complicated operations of the necrophores. A couple get busy about a corpse, say of a field mouse; nearly always one or two isolated males join them, the troop is organized, one sees the chief engineer explore the territory and give orders. The female awaits them, motionless, ready to obey, to follow the movement. As soon as there is a couple the male necrophore commands. The male assists the female during the work of arranging the cell and the laying. Most purse-makers, sisyphus or copris make and transport together the pill which serves as food for the larvæ; their couple is just like that of birds. One might be-

lieve that in this case monogamy is necessitated by the nature of the work; not at all: the male in other quite closely related species, sacred scarab, for example, leaves the female alone to build the excremental ball in which she encloses her eggs.

Coming up to vertebrata one finds also certain examples of a sort of monogamy: when the male fish serves as hatcher for his own eggs, either carrying them in a special pouch, or heroicly sheltering them in his mouth. This is rare, since, usually, the two sexes of fish do not approach each other, do not even know each other. Batrachians, on the contrary, are monogamous; the female does not lay save under male pressure, and it is so slow an operation, preceded by such long manœuvres that the whole season is filled with it. The male of the common land toad rolls the long chaplet of eggs about his feet as soon as it is divided, and goes in the evening to place it in the neighbouring pool. Nearly all saurians seem also to be monogamous. The he and she lizard form a couple said to last several years. Their amours are ardent, they clasp each other closely belly to belly.

Birds are generally considered monogamous, save gallinaceæ and web-footed birds; but exceptions appear so numerous that one would have to name the species one by one. The fidelity of pigeons is legendary, and is perhaps only a legend. The male pigeon certainly has tendencies to infidelity and even to polygamy. He deceives his companion; he goes so far as to inflict upon her the shame of having a concubine under the conjugal roof! And these two spouses, he tyrannizes over them, he enslaves them by beating. The female, it is true,

is not always of an easy disposition. She has her caprices. Sometimes, refusing her mate, she deserts him and gives herself to the first comer. One will not find here any of the zoölogical anecdotes on the industry of birds, their union in devotion to the specie. The habits of these new-comers in the world, are very unstable; yet among certain gallinaceæ, monogamous for exception, like the partridge, the males seem pulled by contrary desires, they undergo the couple rather than choose it, and their share in the rearing of young is often very slight. One has seen the male red partridge, after mating, abandon his female and rejoin a troop of male vagabonds. The nightingales, perfect pair, sit on the eggs turn by turn. The male, when the female comes to relieve him, remains near by and sings until she is comfortably settled on the eggs. Still more devoted is the male talegalle, a sort of Australian turkey. He makes the nest, an enormous heap of dead leaves; when the female has laid, he watches the eggs, comes from time to time to uncover them for exposure to the sun. He takes his share of watching the young, sheltering them under leaves until they are able to fly.

Of mammals, the carnivora and rodents often practice a certain, at least temporary, monogamy. Foxes live in couples, and educate the young foxes. One finds their real habits in the old "Roman du Renart": Renard the fox goes vagabond, hunting for prey and windfalls, while Madame Hermaline, his wife, waits at home, in her bower at Maupertuis. The vixen teaches her children the art of killing and dividing; their apprenticeship is made on the still living game which the male

sociability in angoras, which is just the specie Buffon had studied.

Buck rabbits have still other aberrations, hunters pretend that they pursue doe-hares, tire them and wear them out by their lustiness; it is certain that these couplings give no result.

The Egyptian ichneumon lives in families. It seems that it is very interesting to see them on a hunting expedition, first the male, then the female, then the young in Indian file. Female and young do not take their eyes off father, and imitate all his gestures with care: one might think the train was a large serpent moving in reeds. The wolf who like the fox lives in pairs, helps his female and feeds her, but he does not know his young and will eat them if they come to hand. Certain great apes, gibbon and orang are temporarily monogamous.

Polygamy would be explained by the rarity of males; which is not the case with most mammals, among whom the males are almost constantly more numerous. Buffon was the first to note this predominance, neither has he nor has anyone since, given a satisfactory explanation. People have said that in man, at least, the elder parent gives the sex to the offspring, and the more surely as the difference in age is greater, but, by this reckoning one would have almost nothing but males. People have also said that the younger the woman, the more likely the child to be male. The early marriages of the past are supposed to have yielded more males than the late marriages of the present. None of these statements is serious. What remains past doubt is that European

humanity, to consider only that, gives an excess of males. The general average is about 105, with extremes of 101 in Russia, and 113 in Greece; the French average is the same as the general average. One has not been able to make out, in these variations, either influence of race, or of climate, or of taxes, or of nationality, or anything else in particular. There are more male humans, more male sheep: it is a fact, which being regular, will be difficult to explain.

We find here superabundance, there penury of males, but neither does the abundance determine the customs, nor is it likely the lack of males would do so. There are so few males among gnats that Fabre was the first to recognize them, the proportion about one male to ten females. This in no way produces polygamy, for the male dies the instant after coupling. Nine out of ten gnat females die virgin, and even without having seen a male, without knowing that males exist: perhaps celibacy augments their ferocity, for it is the female gnat and she alone who sucks our gore. One supposes also that female spiders outnumber the males ten or twenty to one: perhaps the buck who has escaped the jaws of one mistress has the courage to risk his life yet again? It is possible, the male spider who survives his amours may live on for several years. Polygamy seems to exist, and in its most refined form, with one sort of spider, the ctenize, whose males are peculiarly rare. The female digs a nest in the earth, into which the male descends; he lives there some time, then he leaves, comes back: there are several houses between which he divides his time equitably.

The polygamy of a curious little fish, the stickleback, is

of the same sort, although more naïve. The male builds a grass nest, then goes in search of a female, brings her back to the nest, invites her to lay; scarcely has his first companion departed when he brings in another. He only stops when there is a satisfactory treasure of eggs, then he fecundates them in the usual manner. Thence on he guards the nest against malefactors, and watches the hatching. In the odd reversal of rôles, the young recognize their father; their mother may be the fish passing between them, or the one gliding off like a shadow, or the one chewing a grass blade. When the stickleback world becomes reasonable, that is to say absurd, it will perhaps give itself up to the "recherche de la maternité"? Their philosophers will demand "Why should the father alone be charged with the education of his offspring?" Up to the present one knows nothing except that he educates them with joy and affection. Among sticklebacks and among men there is no answer to such question save the answer given by facts. One might as well ask why humanity is not hermaphrodite, like the snails, who strictly divide the pleasures and burdens of love, for all snails commit the male act, and all lay. Why has the female ovaries, and the male testicles: and this flower pistils, and this one stamens? One ends in baby-talk. The wish to correct nature is unnecessary. It is hard enough to understand her, even a little, as she is. When she wishes to establish the absolute responsibility of the father, she establishes the strict couple, and especially, absolute polygamy. The pigeon is no longer certain of being the father of his young; the cock can not doubt it, he being the sole male among all his hens. But nature

has no secondary intentions, she keeps watch that, temporary or durable, fugitive or permanent the couples are fecund; that is all.

Gallinaceæ and web-feet present certain birds best known and most useful to us. They are nearly all polygamous. The cock needs about a dozen hens, he can do with a much larger number, but in that case his ardour wears itself out. The duck, very licentious, is accused of sodomy. Not only is he polygamous, but anything will serve him. He might better be a natural example of promiscuity. A gander is good for ten or twelve geese, the cock-pheasant for eight or ten hens. The lyrure tetras needs many more, he leads a sultan's harem behind him. At dawn, in the season of amours, the male starts whistling with a noise like steel on a grindstone, simultaneously stretching himself up, and spreading the fan of his tail, opening and puffing his wings. When the sun clears the horizon he rejoins his females, dances before them, while they devour him with their eyes, then he mounts them, according to his caprice, and with great vivacity.

Polygamy is the rule among herbivora; bulls, bucks, stallions, bison are made to reign over a troop of females. Domesticity changes their permanent polygamy into successive polygamy. Stags go from female to female without tying up to any; the females follow this example. A specie immediately akin gives, on the contrary, an example of the couple; the roebuck and his doe live in family, and bring up their young until these are ready to mate. The male of a certain Asian antelope needs more than a hundred docile females. Naturally, these

harems can only be formed by the destruction of other males. This hundred females represents possibly more than a hundred males put out of business, males being always the more numerous sex, among mammals. The utility of such hecatombs to the race is not certain. Doubtless one may suppose that the surviving male is the strongest, or one of the strongest of his generation, that is the lucky element, but whatever his vigour it may be expected to wane at some point or other before a hundred females desiring satisfaction. Some females are forgotten, others fecundated in moments of weariness: for a certain number of good products, there are a number of mediocre creations. True, these are destined, if male, to perish in future combats; but if they are female, and if they receive the favours of the chief, this system might have for consequence the progressive degradation of the specie. It is however, probable that the necessary equilibrium is re-established; combats between females, combats of coquetry, incitements of femininity, doubtless take place, and it is the triumph of the malest male and of the most female females.

Virey asserts, in Déterville's "Nouveau dictionnaire d'histoire naturelle," that the greater polygamous apes get on very well with women indigenes. It is possible, but no product has ever been born of these aberrations, which we must leave to theological works on *bestialitas*. Men and women, even of the Aryan race have at times set out to prove the radical animality of the human specie by the peculiarity of their tastes. The interest in these matters is chiefly psychological, and if one can draw no proof of evolution from the chance relations

between woman and dog, man and goat, the coupling of primates of different orders offers no evidence either. There is however a relation between man and apes, it is that they are both divisible into polygamists and monogamists, at least temporary; but this does not differentiate them from most other animal species.

In most human races there is a radical polygamy, dissimulated under a show-front of monogamy. Here generalizations are no longer possible, the individual emerges and with his fantasy upsets all observations, and annihilates all statistics. The monogamist's brother is polygamous. A woman has known only one man, and her mother was every one's fancy. One may assert the universal custom of marriage and deduce monogamy as a conclusion, and this will be false or true according to the epoch, milieu, race, moral tendencies of the moment. Moral codes are essentially unstable, since they represent only a hand-book ideal of happiness; morality will modify itself according to the mobility of this ideal.

Physiologically, monogamy is in no way required by the normal conditions of human life. Children? If the father's help is necessary it can be exercised over the children of several women as well as over those of one woman only. The duration of tutelage among civilized people is, moreover, excessive; it is dragged out, when it is a matter of certain careers, almost until ripe age. Normally puberty ought to liberate the young human, as it liberates the young of other mammals. The couple need then last only ten or fifteen years; but female fecundity accumulates children at a year's interval, so that, as long as the father's virility lasts, there might be

dred males to one female. Copulation takes place in the air; as is the case with ants, it is only possible after a long flight has filled with air the pouches which cause the male's organ to emerge. Between these pockets, or aëriferous bladders shaped like perforated horns, emerges the penis, a small white body, plump and bent back at the point. In the vagina, which is round, wide and shallow, the sperm-pouch opens; it is a reservoir which can contain they say, a score of million of spermatozoides, destined to fecundate the eggs, during several years in proportion as they are to be laid. The form of the penis and the manner in which the sperm is coagulated by a viscous liquid into a veritable spermatophore, cause the death of the male. The copulation ended, he wishes to disengage himself but only manages to do so in leaving in the vagina not only the penis but all the organs attached to it. He falls like an empty bag, while the queen, returned to the hive, stops at the entrance, makes her toilet, aided by the workers who crowd about her: with her mandibles she gently removes the spine which has remained in her belly, and cleans the place with lustral attention. Then she enters the second period of her life: maternity. This penis which remains fast in the vagina makes one think of the darts of fighters which also remain in the wound; be it love or war the over-courageous beastlet expires, worn out and mutilated; there is in this a peculiar facility of dehiscence which seems very rare.

The wedding of the queen bee remained a long time absolutely mysterious, and even today there are only a very few observers who have been the distant witnesses

of it. Réaumur, having isolated a queen and a male, witnessed a play or combat with movements which he interpreted with ingenuity. He could not see the actual coupling, which only takes place in the air. His story, is unique and nothing since has confirmed it. He shows us a queen approaching a male, sucking him with her proboscis, offering him honey, stroking him with her feet, and finally irritated by the coldness of her suitor, mounting his back, applying her vulva to the male organ, which Réaumur describes very well ("Memoirs," tome V) and which he represents as covered with a white viscous liquid. The real preludes, at least in a state of liberty, contradict the great observer. The female seems in no way aggressive. Here are the three authentic accounts I have been able to discover:

"6th July, 1849, M. Hannemann, bee-keeper at Wurtemburg, Thuringia was seated near my hive when his attention was aroused by an unaccustomed buzzing. Suddenly he saw thirty or forty drones" (i. e., false drones, male bees) "rapidly pursuing a queen-bee, about twenty or thirty feet up in the air. The group filled a space about two feet in diameter. Sometimes, in their flight, they came as low as ten feet from the ground, then rose, flying north to south. He followed them about a hundred yards, then a building interrupted him. The group of drones formed a sort of cone with the queen at the summit, then the cone enlarged into a globe of which she was the centre: at this moment the queen succeeded in getting away and rose vertically, still followed by the drones who had reformed the cone under her." [1]

[1] Bienenzeitung (Gazette des Abeilles) janvier, 1850.

"Some years later the Rev. Millette, at Witemarsh, observed the final phase of the act. During a hiving, he noticed a flying queen, who an instant later, was stopped by a male. After having flown about a rod they fell to the ground hooked to each other. He approached and captured them both, at the very moment when the male had abandoned himself to the embrace; he carried them to the house and let them loose in a closed room. The queen, angry, flew toward the window; the male after dragging himself for an instant across the open palm of the observer's hand, fell to floor and died. Both male and female had at the tip of the abdomen drops of a milky white liquid; by squeezing the male, he saw that the male had lost his genital organs." (Farmer and Gardener, 1859.)

"Having seen the queen go out, M. Carrey closed the entrance of the hive. During his absence, which lasted a quarter of an hour, three false-drones came to the entrance and finding it closed, continued flying. When the queen on her return was only about three feet from the hive, one of the drones flew very rapidly toward her, throwing his legs around her body. They stopped, resting on a long grass-blade. Then an explosion was distinctly heard, and they separated. The drone fell to the ground quite dead, with abdomen much contracted. After a few circles in the air, the mother entered the hive." (Copulation of the mother bee, in l'Apiculteur, 6e année, 1862.)

Save the remark about the final explosion, these three accounts accord well enough, and give an exact idea of one of the couplings most difficult to get sight of.

It is, moreover, the one half-obscure point in bee life. One knows all the rest, their three sexes, rigorously specialized, the precise industry of the wax-workers, the diligence of the collectresses, the political sense of these extraordinary amazons, their initiatives, when the hive is too full, their starts for the formation of new swarms, the duels of queens where the populace intervene, the massacre of males as soon as they are useless, the nurse's art in transforming a vulgar larva into the larva of a queen, the methodical activity of these republics where all wills, united in a single conscience, have no other aim but the common well-being and the conservation of the race. It is however these over-mechanical virtues which constitute the inferiority of the bee; the workers are extremely laborious and well-behaved, but they lack even that slight personality which characterizes sexed insects. The much less reasonable queen is more living, she is capable of jealousy, rage, of despair when she feels her royalty menaced by the new queen whom the nurses have bred up in secret. Even the useless, noisy, pillaging, parasitic males, drunk and swollen with vain sperm are more attractive than the honest workers, and handsomer also, stronger, more slender, more elegant. Bee-lovers generally despise these musketeers, yet it is they who incarnate the animality, that is to say the beauty of the specie. If it is true as M. Maeterlinck believes (La Vie des Abeilles), that the most vigorous of seven or eight hundred males finally seduces the royal virgin, then their laziness, their greediness, their giddy staggering are but so many virtues.

It seems that the queen and even the workers can

without fecundation lay eggs which will hatch into males; but copulation is necessary in order to produce females and queens; now as only the queen can receive the male, a hive without a queen is doomed. That is the practical point of view, the sexual point of view leads to other reflections. A female can, quite alone, give birth to a male: but to have an egg hatch female, it must be fecundated by a male born spontaneously: one observes here the real exteriorization of the male organ, a segmentation of the genital power, into two forces, the male force and the female. Thus disunited, it acquires a new faculty which will fully unfold itself by the reintegration of the two halves of the initial force into a single force. But why do the virgin-born ovules necessarily give birth to males, among bees, and to females among plant lice? That is the question defying answer. All that one sees is that parthenogenesis is always transitory, and that after a number of virginal generations, normal fecundation always intervenes.

One can not say that the mother bee is a true queen, a veritable chief, but she is the important personage in the hive, the one without whom life stops. The workers have the air of being mistresses; in reality their nervous centre is in the queen; they act only for her, and by her. Her disappearance sets the hive crazy, and drives it to absurd endeavours, such as the transformation of a nurse into a layer, though she will give eggs of one sex only, so many useless mouths. In reflecting on this last expedient one can measure the importance of sex, and understand the absolutism of its royalty. Sex is king, and there is no royalty save the sexual. The making

neuter of the workers, which sets them out of norm, if it is a cause of order in the hive, is above all a cause of death. There are no living creatures save those who can perpetuate life.

The interest offered by bees is very great, but does not pass that offered by the observation of most hymenoptera, social or solitary, or of certain neuroptera, such as termites; or even by beavers, and many birds. But bees have been through many ages our sugar-producers, and they alone; hence man's tenderness for insects more valuable than all others to him. Their intelligence is well developed, but soon shows its limitations. People pretend that bees know their master, a manifest error. The relations of bees and man are purely human. It is evident that they are as ignorant of man as are all the other insects, and all other invertebrata. They allow themselves to be exploited, in the sense of their instinct, to the limit of famine and muscular exhaustion. Virgil's phrase is excessively true, in all the senses one wishes to take: *Sic vos non vobis mellificatis apes.* (Bees making honey not for yourselves.) These clever, witty creatures are fooled by the gross fakes of our industrial cunning. When they have stacked their winter's provisions, honey, into their wax combs, one removes the honeycombs, and replaces them by sockets of varnished paper: and the solemn bees, set themselves to forgetting their long labours; before these virgin combs, they have but one idea: to fill them. They restart work with a bustle which would excite veritable pity in any man but a bee-keeper. These commercials have invented a hive

among termites. Here, as with bees, the neuters are the base of the republic, the males die after mating, the females after laying. "There are," says M. Janet (*Recherches sur l'anatomie de la fourmi*) "workers so different from the others, in the development of their mandibles and the largeness of their heads that one calls them soldiers, a name according with the rôle they fill in the colony." These soldiers are also butchers, who cut up prey which is too large or dangerous. Specialization is the only superiority of the neuters who for the rest seem inferior to the females and to the males in size, muscling and visual organs. The females are sometimes half as large again as the neuters, the males being between the two sizes. The ant shows much more intelligence than the bee. Before this tiny people one seems really to touch humanity. Consider that the ants have slaves, and domestic animals. First the plant lice, preferably those who live on roots, and, at need, those of the rose-bush, who are milked, and who permit it, subjected by long heredity. *Aphis formicarum vacca,* says Linnæus briefly (beetle the ants' cow). But wandering herds are not enough for them, they keep in the interior of their ant-hills, colonies of slave plant-lice, of domesticated staphylins. The staphylins are small coleoptera with mobile abdomen, one of their species is only found among ants. They are domesticated to the point of no longer being able to feed themselves: the ants stuff the necessary food into their mouths. In return the staphylins furnish their masters a revenue analogous to that which they get from the plant-lice: from the bunch of hairs rising at the base of their abdomen they seem to

exude a delectable liquor, at least one sees the ants suck these hairs with great eagerness. These animals permit it. They are so much at home, that the same observer (Muller, traduit par Brullé, dans le *Dictionnaire d'histoire naturelle de Guérin, au mot Pselaphiens*) has seen them coupling without fear in the midst of the busy ant people, the male hunched on the back of the female, solidly crammed against the mellifluous tuft of ant's delicacies.

One knows that the red ants make war on the black ants and steal their nymphs, who, retained in captivity, make them excellent domestics, attentive and obedient. White humanity also, at one point in its history, found itself faced with a like opportunity, but less prudent than the red ant, it let it pass, from sentimentalism, thus betraying its destiny, renouncing, under Christian inspiration, the complete and logical development of its civilization. Is it not amusing that slavery is presented to us as anti-natural, when it is on the contrary, normal and excessively natural to the most intelligent of animals? And in an order of ideas more closely related to the subject of this book, if the making neuter of a part of the population, placing them in castes vowed to continence, is an anti-natural attempt, how is it that social hymenoptera, ants, bees, bumble-bees, and termites among neuroptera, have managed it so well, and have made it the basis of their social state? Doubtless there is nothing like it among animals; but mammals, apart from man, that monster, even including beavers, are infinitely inferior to insects. If the habits of social birds (for there are such) were better known, one might find analogous

practices among them. The sexual co-operation of all the members of a people being useless so far as the conservation of the race is concerned; and on the other hand inferior species living as neighbours to a superior species being destined to disappear, slavery is good for the inferiors as it assures them perpetuity and a sort of evolution suited to their feebleness.

A little brown ant, the anergates, having no workers establishes itself as parasite in an ant-hill and gets itself served by workers of another species in order to live. What ingenuity of the sexed, what docility of the sexless! The worker ants are clearly degenerate females, among whom sexual sensibility has been completely transformed into maternal sensibility. One observes, moreover, in many species an intermediate type of woman-worker, who gives the key to this evolution. One should note that after fecundation the females do not all reenter the city; where they fall, they build, as mother-bumble-bees, a provisory nest, acting then like workers, and await the first egg-laying, which will produce exclusively real workers and will thereby permit the normal construction of the new ant-hill.

There are among ants, as among butterflies, hermaphrodites along the medial line, or sometimes along an oblique line: this gives absurd creatures, half one thing, half the other, or singularities such as a female with a worker's head who functions as a worker.[1]

Polygamy by massacre of males, as among herbivora, and gallinaceæ seems a step toward a more logical and

[1] E. Rambert, after A. Forel, les Mœurs des fourmis (Bibliothèque universelle, tome LV).

more economic distribution of the sexes. If antelopes perpetuate themselves very well with one male to an hundred females, is it not an indication that a part at least of the sacrificed males might have dispensed with being born? And would it not be better, in the interest of the antelopes, that a part of these males, if they ought to continue to be born, should be normally sexless, as with termites, and entrusted with some social duty?

The organization of termites is very pretty; it will do to finish off this brief review of animal societies founded on the unsexing of sexes. One has already noted, in the chapters on dimorphism, the diversity of sexual forms, corresponding to four quite distinct castes. The minute examination of one of their republics permits one to assert differentiations much more numerous, for each of the principal castes passes through active larval and nymphal forms, adolescent forms, such as most neuroptera and libellules also present. In taking count of all the nuances one may observe in a state (to use the familiar word) of termites fifteen different forms, all with marked characteristics. The principal are: 1. Workers, 2. Soldiers, 3. Small males, 4. Small females, 5. Large males, 6. Large females, 7. Nymphs with little cases, 8. Nymphs with long cases, 9. Larvæ. When one attacks an ant hill, the soldiers arrive at the breach, very threatening, odd, with their bodies all head, all mandibles. The enemy routed, the workers come to repair the damage. There are sometimes several female egg-layers; sometimes there is only one male: copulation always takes place outside the hill, and as with ants, the males perish, while the fecundated females become

the origin of a new state. The expeditions of travelling termites, common as fighting termites in South Africa, are naturally directed by soldiers. Sparmann (cited in Guérin's Dictionnaire d'histoire naturelle) observed them during his voyage to the Cape, and says they behave rather as non-coms in close rank, or climbing onto grass blades, watch the defile, beating with their feet, if the order were bad, or too slow. The signal is at once understood, and obeyed by the rank at once, is answered by a whistle. There is in this something so marvellous that one hesitates to accept the traveller's interpretation in entirety. It is not the spontaneous and mechanical discipline of the ants, but the consenting obedience, so difficult to obtain from inferior humanities. After all, nothing is impossible, and without being credulous in these matters, one need be astonished at nothing. Nevroptera are, moreover, exceeding old on the earth; they date from before the coal-beds: their civilization is some thousands of centuries older than human civilizations.

Beavers are the only mammals, man excepted, whose industry indicates an intelligence near that of insects. But their societies offer no complication, they are a simple grouping of couples. They do not construct their dams until the females have been delivered, this happens toward the end of July, one sees no other connection between their sexual habits and their remarkable works.

These enormous trees felled and made to lie where intended, these piles stuck in the river-bed and interbound with twisted branches, these impermeable dams,

all this hard and complicated work, the beaver accepts when pushed by necessity. He needs an artificial lake with unvarying depth; if he finds one made by nature, he accepts it, and limits himself to erecting his regular huts. Thus osmies, chalicodomes, or xylocopes,—or men, if they find by chance a nest prepared, hasten to profit by it. The instinct of construction is by no means blind; it is a faculty which will not be employed very often save in extremity: the present inhabitant of the Loire valley still arranges the caves for domestic use. To its injury, but of that it knows nothing, the bee profits by the artificial combs slid into its hive. The Rhone beaver has rested ever since men erected such excellent dams there. The fairy palace which rises in mid forest for the rubbing of a ring is the human, and animal, ideal.

I must close these observations on natural societies, in pointing out that if they are today based on something quite different from polygamy, it seems likely that they were in origin societies either of polygamy or of sexual communism. If one starts from communism one will very soon evolve either toward the couple, or toward polygamy, if it is a matter of mammals; or toward sexual neutralization if it is a matter of insects. The couple, polygamy, neutralization are methods; sexual communism is not a method, and for that reason one must consider it as the chaos from which order has little by little emerged.

at least among animals, impatience. Animals are by no means mere machines, they, as well as men, are capable of imaginations, they dream, they have illusions, they are subject to desires whose source is in the interior movement of their organism. The sight or odour of a female over-excites the male; but far from any female, the logic of the vital movement suffices perfectly to put them in a state of rut; it is absolutely the same with females. If the state of rut, and if the sensibilization of the genital parts is established far from necessary sex, we have here a natural cause of aberration, for it is this special sensibility which must be used: the first simulacrum, or even the first propitious obstacle will be the adversary against which the exasperated animal exercises the energy by which he is tormented.

One may apply the general principles of this psychology to man, but on condition that we do not forget that man's genital sensibility is apt to be awakened at any moment, and that for him the causes of aberration are multiplied ad infinitum. There would be extremely few aberrated men and women if moral customs permitted a quite simple satisfaction of sexual needs, if it were possible for the two sexes to meet always at the opportune moment. There would remain aberrations of anatomical order; they would be less frequent and less tyrannic, if our customs, instead of contriving ways to make sexual relations very difficult, should favour them. But this easiness is only possible, in promiscuity, which is possibly a worse ill than aberration. Thus all questions are insoluble, and one can only improve nature by disorganizing her. Human order is often a disorder worse than

spontaneous disorder, because it is a forced and premature finality, an inopportune turning of the vital river out of its course.

Sexual selection is probably not a source of variation (i. e., of type); its rôle is, on the contrary, to keep the specie in statu quo. The causes of variation are probably changes of climate, the nature of the soil, the general milieu, and also disease, the troubles of blood and nerve circulation—perhaps certain sexual aberrations. I say, "perhaps," for the cross-breeding between individuals of different species, living in liberty, seems difficult, as soon as the species is really something different from a variety in evolution, a form still seeking itself. At that stage anything is possible; but one is speaking of species (i. e., set species). Mules, bardots, leporides are artificial products; one has never found them in free nature. It is very difficult to obtain the copulation of a hare and she-rabbit; the she-rabbit is refractory and the hare lacking enthusiasm. The mare very often refuses the ass; if she turns her head at the moment of his mounting, one has to bandage her eyes to overcome her disgust; it is the same with the she-ass whom one offers a stallion for producing the bardot. As for the product of bull and mare, the celebrated jumart is a chimæra: comparison of the meagre prong of the bull to the massive one of the stallion is enough to convince one that such dissimilar instruments can not replace each other. Nevertheless it would be imprudent wholly to rule out this form of sexual aberration from the causes of variability of species. That is perhaps one of its justifications.

Of all sexual aberrations perhaps the most curious is

chastity. Not that it is anti-natural, nothing is anti-natural, but because of the pretexts it obeys. Bees, ants, termites, present examples of perfect chastity, but of chastity that is utilized, social chastity. Involuntary, congenital, the neuter state among insects is a state de facto, equivalent to the sexual state, and the origin of a characterized activity. In humans it is a state, often only apparent or transitory, obtained voluntarily or demanded by necessity, a precarious condition, so difficult to maintain that people have heaped up about it all sorts of moral and religious walls, and even real walls made of stones and mortar. Permanent and voluntary chastity is nearly always a religious practice. Men, in all ages, have been persuaded that perfection of being was only obtainable by such renunciation. This seems absurd; it is, on the contrary, very direct logic. The only means of not being an animal is to abstain from the act to which all animals without exception deliver themselves. It is the same motive that has made people imagine abstinence, fasting; but as one can not live without eating, and as one can live without making love, this second method of perfectionment has remained in the state of outline.

It is true, asceticism, of which humanity alone is capable, is one of the means which may lift us above animality; but by itself it is insufficient to do this; by itself it is good for nothing, save perhaps to excite sterile pride; one must add to it an active exercise of the intelligence. It remains to know whether asceticism, which deprives the sensibility of one of its healthiest and most stimulating nutriments is favourable to the exercise of the

intelligence. As it is not the least necessary to answer this question here, we will say nothing save this, provisorily: one need not scorn chastity nor disdain asceticism.

Is modesty an aberration? Indulgent observers have believed that they noticed it in elephants as well as in rabbits. The modesty of the elephant is a popular maxim which makes right-minded women cast sheep's eyes, in circuses, at the great beast who hides for her amours. During copulation, says a celebrated rabbit-raiser [1] "the male and female should be alone, in demi-obscurity. This solitude and obscurity are more necessary in view of the fact that certain females show signs of modesty." The modesty of animals is a fancy. Like modesty among humans, it is merely the mask of fear, the crystallization of timorous habits, necessitated by the animals being unarmed during coupling. This is very well known and needs no explanation. But the need of reproduction is so tyrannic that, even among the most timid animals, it does not always leave them presence of mind enough to hide themselves during the amour. The most domesticated of animals, one knows it only too well, shows at this moment neither fear nor shame.

In man, among the civilized and among the uncivilized, sexual fear, shame, has taken a thousand forms which, for the most part, seem to have no longer any relation to the original feeling whence they are derived. One notices however that if the milieu where the couple finds itself is such that no attack, no ridicule is to be feared, shame

[1] Mariot-Didieux, Guide pratique de l'éducateur de lapins. Bibliothèque des professions industrielles et agricoles, série H. No. 17.

vanishes, in part, or entirely, according to the degree of security, and the degree of excitement. For a crowd of populace on a fête night there is hardly any modesty save "legal modesty"; the example of one bolder couple is enough, if there is no authority to be feared, to set loose all the appetites, and one then sees clearly that man who does not hide in order to eat, only hides to make love under pressure of usage.

From the genital act, modesty is stretched over the exterior sexual organs by a mechanism very simple and very logical. But here, I think, one must distinguish between genital modesty bred from the custom of clothing the whole body, and that which has led men to cover only a particular part. Heat, cold, rain, insects explain clothing, but not the savage's cotton drawers or the fig leaf; especially when the leaf, imposed on married women, for example, is forbidden to virgins, or when this symbolic leaf is so reduced that it serves no purpose, save that of a sign. In this last case, it has not even any direct relation to genital modesty; it is only a matrimonial ornament, analogous to the ring or the collar, a sign, indeed indicating a condition. It is possible also, that among certain peoples where the men go entirely naked, the women wear an apron merely to keep off flies, gad-flies, rather as a peasant drapes his horse's muzzle with grass and leaves. Quite often, however, one is forced to recognize in these customs, the proof of a particular genital sensibility, analogous to civilized modesty. An English sailor, at the time of the first explorations got himself rejected by the Maori women not because he appeared without clothing, a

state which custom required, but because he appeared with his organ unsheathed. This detail shocked them extremely. A curious example of the localization of shame: all parts of the body could and should show themselves, all save this small surface. On reflection, the modesty of Europeans at a ball or on the beach is almost as absurd as that of the Maoris, or as that of the fellaheen women who at the approach of a stranger remove their shirts, their sole garments, in order to cover their faces.

Sexual modesty, as one observes it today, among the most various peoples, is utterly artificial. Livingstone assures us that he developed modesty in little Kaffir girls by clothing them. Surprised in négligé, they covered their breasts—and this in a race where the women go wholly naked, save for a string round the middle, from which another string hangs. Clothing is only one of the causes of modesty, or of customs which give us the illusion of it, and the sentiment of fear associated with the sexual act does not explain all the rest. There is a shame particular to the female, an ensemble of movements, which one can assimilate to nothing, which one can attach to nothing. The gesture of Venus modest is not purely a woman's gesture; nearly all females, especially mammifers, have it; the female, who refuses, lowers her tail and clamps it between her legs; there is here, evidently, the origin of one of the particular forms of modesty. We have given characteristic examples in an earlier chapter.

Man is un-get-at-able; the slightest of his habitual sentiments has multiple and contradictory roots in a

can cut her in two without making her let go; a chain, truly, of carnage.

The larvæ of the sphex, another wasp, are fed on live crickets that have been paralyzed by a stab. As soon as it hatches the larva attacks the cricket in the belly at the chosen spot where the egg has been layed. The poor insect protests by feeble movements of antennæ, and mandibles: in vain; he is eaten alive, fibre by fibre, by a great worm which gnaws his entrails, and with so great a skill that it begins on the parts not essential to life, and thus keeps the prey fresh and tasty to the last. Such is the gentleness of nature, the good mother.

The carabes are fine coleoptera, violet, purple, and golden. They feed only on living prey, which they chew slowly, beginning at the belly, and boring slowly into the palpitating cavity. Helices, and slugs are thus torn apart by bands of carabes who dig them up and dissect them in a boiling of saliva.

Such are theft and murder, in nature. These are the normal acts. Herbivorous species alone are innocent perhaps from imbecility; always occupied in eating, because their food is so unsubstantial, they have not time to develop their powers: they are the inevitable prey, a sort of superior grass which will be browsed at the first opportunity. But the carnivora are in the same way eaten by their stronger and more adroit fellow-boarders. Very few beasts have a quiet death. The geotrupes, scarabs, necrophores their work finished, the egg-laying accomplished, devour each other to pass the time, perhaps, to lend a little gaiety to their last moments. Animals are of but two sorts, hunters and game, but

there is scarcely a hunter who is not game in his turn. One does not find in nature the purely human invention of breeding for slaughter, or the more extraordinary one of breeding for hunting. Ants know how to milk their cows, the plant-lice, or their goats the staphylins; they do not know how to fatten them and to slit their gullets.

A hundred other signs of animal cruelty are scattered through this book. One may collect many others, and this might form a work edifying in this era of sentimentalism. Not because one wishes—quite the contrary—to offer them to men as so many examples; but because this might teach them that the first duty of a living being is to live, and that all life is nothing but a sum sufficient of murders. Men or tigers, sphex or carabes are under the same necessity: to kill or to die, or to shed blood or eat grass. But to eat grass, is not much better than suicide: ask the lambkins.

a simple allotropic form of intelligence, or, if you prefer, consider intelligence and matter as equivalents, and admit that intelligence is merely matter endowed with sensibility, and that its power of extremely diversifying itself finds impassable limits in the very forms which clothe it. Instinct is the proof of these limits. When acts have become instinctive, they have become invincible. A specie is a group of instincts whose tyranny becomes, one day, deaf to all attempts at movement. Evolution is limited by the resistance of what is, striving against what might be. There comes a moment when a specie is a mass too heavy to be moved by intelligence: then it remains in its place; this is death, but is compensated by the steady arrival of other species; new forms assumed by the inexhaustible Proteus.

One will add nothing, here, to this theory, save a few facts favourable to it, and a handful of objections.

The old distinction between intelligence and instinct, although false and superficial, may be adapted to the views just abbreviated. We will attribute to instinct the series of acts which tend to conserve the present condition of a specie; and to intelligence, those which tend to modify that condition. Instinct will be slavery, subjection to custom; intelligence will represent liberty, that is to say, choice, acts which while being necessary, since they occur, have yet been determined by an ensemble of causes anterior to those which govern instinct. Intelligence will be the deep, the reserve, the spring which after long digging emerges between the rocks. In everything that intelligence suggests, the consciousness of the species makes a departure; what is useful is incorporated

in instinct, enlarging and diversifying it; what is useless perishes—or perhaps flowers in extravagances, as it does in man, in dancing and gardening birds, or the magpies attracted by a jewel, larks by a mirror! One will then call instinct, the series of useful aptitudes; intelligence, the series of aptitudes de luxe: but what is useful, what useless? Who will dare brand a series of bird notes or a feminine smile as lacking utility? There is neither utility nor inutility unless there be also finality. But finality can not be considered as an aim; it is nothing but a fact, and one which might be other.

This utilization of old terms, if it were possible, could never be the pretext for a new radical differentiation between instinct and intelligence; one could only use it to define by contrast two states whose manifestations present appreciable nuances. The great objection to the essential identification of instinct and intelligence comes from a habit of mind which spiritistic philosophy has for long imposed upon us: instinct should be unconscious, intelligence, conscious. But psychological analysis does not permit us rigorously to tie intellectual activity to consciousness. Without consciousness, every thing might happen, even in the most thoughtful man, exactly as it does under the paternal eye of this consciousness. In M. Ribot's interesting analogic comparison, consciousness is an internal candle lighting a clock-face; it has the same influence on the movement of the intelligence that this candle has on the clock. It is difficult to know whether animals have consciousness, and it is perhaps useless, unless at least, one admit that this candle, by its luminous or calorific rays, does, as M. Fouillée teaches,

affect the march of the mechanism. In sum, consciousness also is a fact, and no fact dies without consequences; there are neither first causes nor last causes. In any case one will, since it is evident, cling to one statement that even if consciousness is a possible reactive, intelligence can act without it: the most conscious of men have phases of unconscious intellectuality; long series of reasonable acts may be committed without their reflection being visible in the mirror, without the candle being lit before the clock. In brief, it does not seem as if nervous matter could exist without intelligence or sensibility; but consciousness is an extra. There is no need to take count of the old scholastic objection to the identification of the intelligence and the instinct.

What is there serious in the other objection: that man, if he once had instincts, has lost them?

The animal having the richest instincts ought also to have, or to have had, the richest intelligence. And reciprocally: intellectual activity supposes a greatly varied instinctive activity, either in the present or in the future. If man have not instincts, he ought to be in the way of making them. He has numerous instincts, and makes more every day: a part of his consciousness is constantly crystallizing itself into instinctive acts.

But if one consider the different instincts of animal species one will scarcely find any which are not also human. The great human activities are instinctive. Doubtless man may refrain from building a palace, but he can not dispense with a cabin, a nest in a cave, or in the fork of a tree, like the great apes, many mammals, birds, and most insects. His food depends very little on

choice, it must contain certain indispensable elements: a necessity identical with that which rules the animals, and even the plants whose roots reach down toward the desired juice, and whose branches reach toward the light. Song, dance, strife, and, for the group, war; human instincts are not unknown to all animals. The taste for brilliant things, another human instinct is frequent enough in birds; it is true that birds have not yet made anything of it, and that man has evolved the sumptuary arts. There remains love, but I think this supreme instinct is the consecrated limit of the objections.

Useful acts habitually repeated may become invincible, like veritable instinctive movements. A hunter [1] spending the winter in an isolated cabin in Canada engaged an Indian woman to keep house for him. She arrives in the evening, melts the snow, begins to wash up, shifts everything, prevents his getting any sleep. He rages. Silence. As soon as he is asleep, the woman mechanically begins to work again, and so on, until the humble Indian gets the last word. Here, exactly as among insects, one has the example of work which once begun must go on until it is finished. The insect can not be interrupted; if it is interrupted by external cause it starts work again not at the point where it actually finds the work, but at the point where it, the insect, left off. Thus, one entirely removed the nest which a chalicodome was building on a shingle; the bee returns, finds nothing, since there is nothing to find, but instead of recommencing the building, continues it. There was nothing to be done but close the hole; the bee closes it, that is to say she deposits the last

[1] Vide Milton and Cheaddle, works already cited.

mouthful of mortar on the ideal dome of an absent nest: then with instinct satisfied, sure of having assured her posterity, she retires, she goes to die. One can get the same result with the pélopée, and with other builders. Processional caterpillars are accustomed to make long trips in Indian file on the branches of their native pine-tree, in search of food: if one place them on the rim of a basin they will stupidly circulate for thirty hours, without one of them having the idea of interrupting the circle by going off at a tangent. They will die in their track, stuck fast in obedience; when one falls another steps into his place, the ranks close, that is all. Here are the extremities of instinct, and to our great surprise they are almost the same in an Indian of the great lakes and in a processional pine caterpillar.

But other cases of animal's instinct joining with free intelligence, give examples of human sagacity. We have seen these same mason bees and xylocopes and domestic bees profit eagerly by a nest ready made, by a hole bored in wood, by artificial combs set ready to take their honey; the osmies, who lay in the stalks of cut reeds, in which they arrange a series of chambers, accommodated themselves under Fabre's guidance in glass tubes which permitted the great observer to know them intimately. Instinct is by turns as stupid as a machine and as intelligent as a brain; these two extremes should correspond with very ancient and very recent habits. It is certainly but a relatively short time since the peasant's pruning-bill began preparing cut reeds for the osmie; before that time she constructed her nest, as she still does, in empty snail shells or in some natural cavity. They are very

interesting these osmies, extremely active solitary bees; one sees them having exhausted their ovaries, but not their muscular force, building extra nests, provisioning them with honey, without having laid a single egg in them; they will even make and close them without honey, if they do not find more flowers, thus showing a real craziness for work, an authentic mania, analogous to that which moves man to move pebbles, to smoke, to drink rather than remain immobile.[1] If the osmie lived longer, she might perhaps invent some game which, vain at the start, would end by becoming both a need and a benefit to the whole species.

The theory which makes instinct a partial crystallization of intelligence is extremely seductive: I dare say we will have to accept it as true. Yet the contemplation of the insect world raises an enormous objection. In the course of his wonderful memoirs Fabre has formulated it ten times and with always fresh ingenuity. Here is the insect, nearly always born adult, and after the death of her parents, she has received from them neither direct education nor education by example, as do the young of birds or mammals. A hen teaches her chick to scratch for worms (it is true that she does not teach her ducklings to dabble in puddles, and they are her despair, to our amusement), an osmie can teach its young nothing. Yet now osmies do exactly what their ancients have done. The insect opens its shell, brushes its antennæ, performs its toilet, opens its wings, flies off for life, moves without

[1] Compare this with the valuable remarks of a gamekeeper, "One must know the habits of animals, even their manias, for they have them, just as we do." Figaro, 31, Aug. 1903.

hesitation toward the pasture it needs, recognizes and flees the enemies of its race, makes love, and finally constructs a nest identical with the cradle from which it has emerged.[1]

One sees quite well that the acquisitions of the individual have passed to the descendant, but how? How have they fixed themselves in the nerves and blood during a few short days of life? Without any apprenticeship the sphex paralyzes with three stabs the cricket which is to feed its larvæ; if the cricket is killed and not paralyzed, the larvæ will die, poisoned by the carrion; and if the paralysis is not durable the cricket will come to, and destroy the sphex in the egg. The manœuvre of this wasp and of many other killing hymenoptera has this tiresome point for our reasoning, the act must be perfect, on pain of death. Nevertheless it must be admitted that the sphex has formed itself slowly, like all complex ani-

[1] To my mind a slight unsoundness creeps into Chap. XVI, and here both Fabre and Gourmont seem to me to go astray in considering the insect as a separate creature, i. e. a creature cut off from its larva or cocoon life. Surely the animal may be supposed to exist while in its cocoon or larva, it may reasonably be supposed to pass that period in reflection, preparing for precisely the acts of its desire (as for example an intelligent young man might pass his years in a university under professors, awaiting reasonable maturity to act or express his objections). The larva has its months of quiet, precisely the necessary pre-reflection for the two days' joy-ride of exterior manifestation, amours, etc., its *contemplatio,* or what may be counted as analogous, passing in its cell. The perfection and precision of its acts, being, let us say, proportionate to the non-expressive period. Having spent God knows how long in that possibly monotonous nest, it seems small wonder that the insect should know the pattern by heart. Small wonder, that is to say wonder not incommensurate with the general wonder of the whole process. —E. P.

mals, and that its genius is only the sum of intellectual acquisitions slowly crystallized in the specie.[1] As for the mechanism of this transformation of intelligence into instinct, it has for motive the principle of utility; intelligent acts which are useful for the preservation of the specie, are the only ones which pass into instinct.

The science of these hymenoptera goes so far that it was ahead of human science until yesterday. The insect attacks the nervous system; it knows that the power of beginning a movement lies in the nervous system and not in the limbs. If the nervous system is centralized as in weevils, their enemy the cerceris gives only one dagger-stab; if the movement depends on three ganglia, it gives three stabs; if on nine ganglia, nine: thus does the shaggy ammophile when it needs the caterpillar of the noctuelle, commonly called the gray worm, for its larvæ; if a single sting in the cervical ganglion appears too dangerous, the hunter limits himself to chewing it gently, in order to induce the necessary degree of immobility. It is odd that the social hymenoptera who know how to do so many difficult things, are ignorant of this savant dagger-play. The bee stings at random, and so brutally that she mutilates herself while often inflicting but an insignificant wound on her adversary. Collective civilization has diminished the individual genius.

[1] Vide translator's postscript.

THE NATURAL

CHAPTER XX

TYRANNY OF THE NERVOUS SYSTEM

Accord and discord between organs and acts.—Tarses and sacred scarab.—The hand of man.—Mediocre fitness of sexual organs for copulation.—Origin of "luxuria."—The animal is a nervous system served by organs.—The organ does not determine the aptitude.—Man's hand inferior to his genius.—Substitution of one sense for another.—Union and rôle of the senses in love.—Man and animal under the tyranny of the nervous system.—Wear and tear of humanity compensated by acquisitions.—Man's inheritors.

It is a universal belief that nature or God, in their wisdom, have made the corporal organs in the best possible form: perfection of the eye, of the hand, of the paw-jaw of the mantis, of the sexual apparatus of man, of the bird or the scarab, the furnishing tarses of hymenoptera, the beaver's tail, the grasshopper's hams, the cicada's tambourine. It is sometimes true and very often false. It happens that there appears an exact concord between the organ and the act which it is to perform; but it happens also, and that not rarely, that the organs seem in no way fashioned for the deed they must accomplish: most of them are indeed chance tools, with which the

creature manages, as he can, the acts which he wants to, or should, do.

The forefeet of scarabs are so little destined for modelling and rolling mud-balls that their tarses are worn out in the process, as human fingers would perhaps be worn if they had to knead the raw clay and mortar. In considering the scarab one has to think of a humanity lacking fingers, having lost them by a long and slow diminution of nails, bones, flesh. The scarab is a modeller, nothing would be more useful to him than fingers; instead of losing them by use, he ought to have grown them longer and more supple. He has lost them, and it is with the arm stumps that he turns the little balls which are to be food for himself or his offspring. This insect is condemned to a labour that will become increasingly difficult as the species grows increasingly older. It remains to know whether the ancestors of the sacred scarab had tarses. Horus Apollo grants them as many fingers as the month has days, that is thirty, which corresponds quite well with the six feet and five tarses of the scarab. If he was a good observer, the question is answered, but a single testimony is insufficient, and moreover it is unlikely that so great a wearing-away would have occurred in so small a number of centuries. Horus, and a savant like Latreille himself, have been the dupes of symmetry; if either has looked closely at a scarab, and if he has seen the forefeet lacking tarses, he has put this down to chance or to accident. Fabre has at least noted one indisputable fact, it is that neither as nymph nor adult has the scarab tarses on his forefeet. If it ever had them, our reasoning draws new vigour from the negation, for then less than

ever is it possible to find the least logical concordance between the insect's stumps and the need of modelling and turning to which nature condemns it.

This scarab is a type to which one can relate a great number of other examples: purveyor hymenoptera are wholly deprived of tools adapted to their work as quarrymen and well-diggers: thus, at the end of their labours the greater part of these fragile insects are very much damaged. One knows the beaver's constructions, but who without the certitude we have gained by observation, would have dared to attribute them to these great rats?

Eighteenth century philosophers set themselves the question: Is man man because he has hands; or has he hands because he is man? One may answer boldly, that man's hands marvellous as they appear to us, add almost nothing to his intelligence. One does not see that they are indispensable for anything save for playing the piano. What constitutes man is his intelligence, his nervous system. The exterior organ is secondary: no matter what exterior organ, beak, prehensile tail, teeth, proboscis, paws would have done the work of the hands. There are birds' nests which no manual cleverness could weave.

The reproductive organs are no better adapted to their purpose than are the working organs. Doubtless they attain very often their end, but at the cost of efforts which a better disposition would have attenuated or eliminated altogether. The interior mechanism is, or seems, marvellous; the external mechanism is rudimentary and gives no result, save, as they say, thanks to the ever-renewed ingenuity of the couples. Instinct, in one of its most necessary acts, is often put to difficult proof.

PHILOSOPHY OF LOVE

The plausible adventure of Daphnis has been presumably often repeated, even though the limberness of the human form is well suited to coition; but who has not been surprised to see a heavy bull leap clumsily onto a lowing cow, bending his useless hocks along her back, panting, and often not succeeding save thanks to the good offices of a farm hand? Among beavers, says A. de Quatrefages (Orbigny's "Dictionnaire d'histoire naturelle"), the external orifice of the generative organs opens in a cloaca so placed under the tail that one hardly understands how the coupling takes place.

Certain matings are sheer tours de force, and the animal whether it be the scutillary, a tiny insect, or the elephant, a colossus, is compelled to take positions absolutely different from its normal postures. Nature who firmly intends the perpetuity of the species, has not yet found a simple and unique means thereto; or else, having found it, in budding, she has cast it aside to adopt the diversity of organs, means, and movements. There are none, even to those of our own specie which man may not criticize, even though he prize them; he has criticized, and his criticism has been to diversify them still further, which simplifies a fated necessity in making it pleasanter. Morals term this diversification "luxure."[1] This term is a pejorative which may be applied also to the exercise of our other senses. All is but *luxuria*. *Luxuria,* the variety of foods, their cooking, their seasoning, the culture of special garden plants; *luxuria:* the exercises of

[1] The Latin *luxuria* and French *luxure* have no exact English equivalent; our "luxury," is the French *luxe;* the phrase "the exercise of pleasant lusts" is perhaps as near as I can come to a definition of *luxure.*—Translator.

the eye, decoration, the toilet, painting; *luxuria,* music; *luxuria,* the marvellous exercises of the hand, so marvellous that direct hand work can be mimicked by a machine but never equalled; *luxuria,* flowers, perfumes; *luxuria,* rapid voyages; *luxuria,* the taste for landscape; *luxuria,* all art, science, civilization; *luxuria,* also the diversity of human gestures, for the animal in his virtuous sobriety has but one gesture for each sense, and that gesture unvarying; or if the gesture, as probable, undergoes a change, it is but a slow, invisible change, and there is at the end but one gesture. The animal is ignorant of diversity, of the accumulation of aptitudes; man alone is *"luxurieux,"* is libidinous.

There is a principle which I will call the individualism of species. Each specie is an individual which profits as best it may, for its useful ends, by the instruments which have devolved to it. A specie of hymenoptera feels itself obliged to protect its eggs from new enemies, by digging holes in the ground; it makes use of the tools which it has, without taking count of the fact that these tools have not been made for excavation; it acts thus at pressure of necessity, as man climbs trees in a flood, or gets onto the roof in case of fire. The need is independent of the organ; it precedes it, and does not always create it. In the sexual act, need commands the gesture: the animal adapts itself to positions which are strange to it, and very difficult. Coupling is nearly always a grimace. One would say that nature has set the male organ here, and the female there, and left to specific ingenuity the care of effecting the junction.

It is, I think, permitted us to conclude from the medi-

ocre fitness of animals to milieu, and of organs to acts, that it is not the milieu which absolutely fashions, or the organs which absolutely govern, the acts. One then feels oneself inclined to reaccept Bonald's definition of man, and even to find it admirable, just, and strict: An intelligence served by organs. Not "obeyed," not always, but served, service implying imperfection, a discord between the order and its fulfillment. But the phrase applies not to man only, and its spiritualistic origin in no way diminishes its aphoristic value; it qualifies every animal. The animal is a nervous centre, served by the different tools in which its branches terminate. It commands, and the tools, good or bad ones, obey. If they were incapable of performing their work, at least the essential parts of it, the animal would perish. There are forms of parasitism which seem to be the consequence of a general renunciation of organs; impotent to enter into direct relations with the outer world, unmanned by the softness of the muscles, the nervous system brings the skiff it was piloting into some harbour or other, and beaches it.

Fabre says, thinking particularly of insects: "The organ does not determine the aptitude." And this most aptly confirms Bonald's manner of seeing. Thrown in at the end of a chapter, with scarcely anything directly to justify it, this affirmation but gains in value. It is the conclusion, not of a dissertation, but of a long sequence of scientific observations. As for the facts that one can set inside it, they are innumerable; one would group them under two heads: The animal serves himself as best he can with the organs he possesses; he does not always make use of them. The flying-stag, the best

not a cause. Insects' eyes are very different from ours. One has spoken of the experiments of a German savant who wished to throw visual images on the brain without the eye's intervention. This is suspicious, but not absurd: insects are gifted certainly with the power to smell, but one has never been able to discover the organ in any single one of them; and, also, the rôle of the antennæ which seems very considerable in their life, remains very obscure, since the removal of these appendices has not always a measurable effect on their activity.[1]

Organs, evidently the most useful, are sometimes placed in a position which diminishes their value. Notice a resting horse, and another horse coming toward him (observation can be made quite easily in the streets of Paris), what is he to do to gauge the danger, and reconnoitre the movement? Look at the other horse? No. His eyes are made to look sideways, not forward. He uses his long ears, raises them, shifts their open side toward the noise. Reassured he lets them fall, and reestablishes his calm. The horse looks with his ears. The blinkers by which people pretend to make him look forward, merely blind him, and perhaps, thereby diminish his impressionability. Blind horses moreover do the same work as the others.

The senses, as one knows, are substitutable one for the other, in a certain degree; but in the normal state they seem rather to reinforce each other mutually, and lend each other a certain support. One does not shut the eyes to hear better, save when one has determined the

[1] Fabre's experiments on mason bees, the shaggy ammophile, and great-peacock moth.

source of the sound. And even then, is it to hear better? Is it not rather to reflect and to hear at the same time, to manage an interior concentration with which the eye, essentially an explorative organ, would interfere?

It is in love that this alliance of all the senses is most intimately exercised. In superior animals, as well as in man, each sense, together or in groups, comes to reinforce the genital sense. None remain inactive, eye, ear, scent, touch, even taste come into play. Thus one explains the gleam of plumage, the dance, song, sexual odours. The female eye, in birds, is more sensitive than the male eye; the contrary is true of humanity; but female birds and women are particularly moved by song or words. The two sexes in dogs have, equally, recourse to scent; sight seems to play but an insignificant rôle in their sexual access, since minuscule canine beasts do not fear to address themselves to monsters, which for man would be in proportion more than that of a mammoth. Insects before mating often caress each other with their mysterious antennæ; the male is sometimes given a sounding apparatus: cricket and grasshopper drum to charm their companions.

It is not necessary to explain how in humans, especially in the male, all the senses concur in the amour, at least when moral and religious prejudices do not stop their impetus. It should be so, in an animal so sensitive, and of so complex and multiple a sensibility. The abstention of a single sense from the coupling is enough to enfeeble the pleasure very greatly. The coldness of many women may proceed less from a diminution of their genital sense, than from the general mediocrity of their senses.

THE NATURAL

TRANSLATOR'S POSTSCRIPT

"Il y aurait peut-être une certain corrélation entre la copulation complète et profonde et le développement cérébral."

Not only is this suggestion, made by our author at the end of his eighth chapter, both possible and probable, but it is more than likely that the brain itself, is, in origin and development, only a sort of great clot of genital fluid held in suspense or reserve; at first over the cervical ganglion, or, earlier or in other species, held in several clots over the scattered chief nerve centres; and augmenting in varying speeds and quantities into medulla oblongata, cerebellum and cerebrum. This hypothesis would perhaps explain a certain number of as yet uncorrelated phenomena both psychological and physiological. It would explain the enormous content of the brain as a maker or presenter of images. Species would have developed in accordance with, or their development would have been affected by, the relative discharge and retention of the fluid; this proportion being both a matter of quantity and of quality, some animals profiting hardly at all by the alluvial Nile-flood; the baboon retaining nothing; men apparently stupefying themselves in some cases by excess, and in other cases discharging apparently only a surplus at high pressure; the gateux, or the genius, the "strong-minded."

I offer an idea rather than an argument, yet if we con-

sider that the power of the spermatozoide is precisely the power of exteriorizing a form; and if we consider the lack of any other known substance in nature capable of growing into brain, we are left with only one surprise, or rather one conclusion, namely, in face of the smallness of the average brain's activity, we must conclude that the spermatozoic substance must have greatly atrophied in its change from lactic to coagulated and hereditarily coagulated condition. Given, that is, two great seas of this fluid, mutually magnetized, the wonder is, or at least the first wonder is, that human thought is so inactive.

Chemical research may have something to say on the subject, if it be directed to comparison of brain and spermatophore in the nautilus, to the viscous binding of the bee's fecundative liquid. I offer only reflections, perhaps a few data. Indications of earlier adumbrations of an idea which really surprises no one, but seems as if it might have been lying on the study table of any physician or philosopher.

There are traces of it in the symbolism of phallic religions, man really the phallus or spermatozoide charging, head-on, the female chaos. Integration of the male in the male organ. Even oneself has felt it, driving any new idea into the great passive vulva of London, a sensation analogous to the male feeling in copulation.

Without any digression on feminism, taking merely the division Gourmont has given (Aristotelian, if you like), one offers woman as the accumulation of hereditary aptitudes, better than man in the "useful gestures," the perfections; but to man, given what we have of history, the "inventions," the new gestures, the extrava-

gance, the wild shots, the impractical, merely because in him occurs the new up-jut, the new bathing of the cerebral tissues in the residuum, in *la mousse* of the life sap.

Or, as I am certainly neither writing an anti-feminist tract, nor claiming disproportionate privilege for the spermatozoide, for the sake of symmetry ascribe a cognate rôle to the ovule, though I can hardly be expected to introspect it. A flood is as bad as a famine; the ovular bath could still account for the refreshment of the female mind, and the recharging, regracing of its "traditional aptitudes;" where one woman appears to benefit by an alluvial clarifying, ten dozen appear to be swamped.

Postulating that the cerebral fluid tried all sorts of experiments, and, striking matter, forced it into all sorts of forms, by gushes; we have admittedly in insect life a female predominance; in bird, mammal and human, at least an increasing male prominence. And these four important branches of "the fan" may be differentiated according to their apparent chief desire, or source of choosing their species.

Insect, utility; bird, flight; mammal, muscular splendour; man, experiment.

The insect representing the female, and utility; the need of heat being present, the insect chooses to solve the problem by hibernation, i.e., a sort of negation of action. The bird wanting continuous freedom, feathers itself. Desire for decoration appears in all the branches, man exteriorizing it most. The bat's secret appears to be that he is not the bird-mammal, but the mammal-insect: economy of tissue, hibernation. The female prin-

ciple being not only utility, but extreme economy, woman, falling by this division into a male branch, is the least female of females, and at this point one escapes from a journalistic sex-squabble into the opposition of two principles, utility and a sort of venturesomeness.

In its subservience to the money fetish our age returns to the darkness of mediævalism. Two osmies may make superfluous egg-less nests, but do not kill each other in contesting which shall deposit the supererogatory honey therein. It is perhaps no more foolish to go at a hermit's bidding to recover an old sepulchre than to make new sepulchres at the bidding of finance.

In his growing subservience to, and adoration of, and entanglement in machines, in utility, man rounds the circle almost into insect life, the absence of flesh; and may have need even of horned gods to save him, or at least of a form of thought which permits them.

Take it that usual thought is a sort of shaking or shifting of a fluid in the viscous cells of the brain; one has seen electricity stripping the particles of silver from a plated knife in a chemical bath, with order and celerity, and gathering them on the other pole of a magnet. Take it as materially as you like. There is a sort of spirit-level in the ear, giving us our sense of balance. And dreams? Do they not happen precisely at the moments when one has tipped the head; are they not, with their incoherent mixing of known and familiar images, like the pouring of a complicated honeycomb tilted from its perpendicular? Does not this give precisely the needed mixture of familiar forms in non-sequence, the jumble of fragments each coherent within its own limit?

And from the popular speech, is not the sensible man called "level-headed," has he not his "head well screwed on" or "screwed on straight;" and are not lunatics and cranks often recognizable from some peculiar carriage or tilt of the head-piece; and is not the thinker always pictured with his head bowed into his hand, yes, but level so far as left to right is concerned? The upward-jaw, head-back pose has long been explained by the relative positions of the medulla and the more human parts of the brain; this need not be dragged in here; nor do I mean to assert that you can cure a lunatic merely by holding his head level.

Thought is a chemical process, the most interesting of all transfusions in liquid solution. The mind is an upspurt of sperm, no, let me alter that; trying to watch the process: the sperm, the form-creator, the substance which compels the ovule to evolve in a given pattern, one microscopic, minuscule particle, entering the "castle" of the ovule.

"Thought is a vegetable" says a modern hermetic, whom I have often contradicted, but whom I do not wish to contradict at this point. Thought is a "chemical process" in relation to the organ, the brain; creative thought is an act like fecundation, like the male cast of the human seed, but given that cast, that ejaculation, I am perfectly willing to grant that the thought once born, separated, in regard to itself, not in relation to the brain that begat it, does lead an independent life much like a member of the vegetable kingdom, blowing seeds, ideas from the paradisal garden at the summit of Dante's Mount Purgatory, capable of lodging and sprouting

where they fall. And Gourmont has the phrase "fecundating a generation of bodies as genius fecundates a generation of minds."

Man is the sum of the animals, the sum of their instincts, as Gourmont has repeated in the course of his book. Given, first a few, then as we get to our own condition, a mass of these spermatozoic particles withheld, in suspense, waiting in the organ that has been built up through ages by a myriad similar waitings.

Each of these particles is, we need not say, conscious of form, but has by all counts a capacity for formal expression: is not thought precisely a form-comparing and form-combining?

That is to say we have the hair-thinning "abstract thought" and we have the concrete thought of women, of artists, of musicians, the mockedly "long-haired," who have made everything in the world. We have the form-making and the form-destroying "thought," only the first of which is really satisfactory. I don't wish to be invidious, it is perfectly possible to consider the "abstract" thought, reason, etc., as the comparison, regimentation, and least common denominator of a multitude of images, but in the end each of the images is a little spoiled thereby, no one of them is the Apollo, and the makers of this kind of thought have been called dry-as-dust since the beginning of history. The regiment is less interesting as a whole than any individual in it. And, as we are being extremely material and physical and animal, in the wake of our author, we will leave old wives' gibes about the profusion of hair, and its chance possible indication

or sanction of a possible neighbouring health beneath the skull.

Creative thought has manifested itself in images, in music, which is to sound what the concrete image is to sight. And the thought of genius, even of the mathematical genius, the mathematical prodigy, is really the same sort of thing, it is a sudden out-spurt of mind which takes the form demanded by the problem; which creates the answer, and baffles the man counting on the abacus.

I query the remarks about the sphex in Chapter XIX, "que le sphex s'est formé lentement," I query this with a conviction for which anyone is at liberty to call me lunatic, and for which I offer no better ground than simple introspection. I believe, and on no better ground than that of a sudden emotion, that the change of species is not a slow matter, managed by cross-breeding, of nature's leporides and bardots, I believe that the species changes as suddenly as a man makes a song or a poem, or as suddenly as he *starts* making them, more suddenly than he can cut a statue in stone, at most as slowly as a locust or long-tailed Sirmione false mosquito emerges from its outgrown skin. It is not even proved that man is at the end of his physical changes. Say that the diversification of species has passed its most sensational phases, say that it had once a great stimulus from the rapidity of the earth's cooling, if one accepts the geologists' interpretation of that thermometric cyclone.

The cooling planet contracts, it is as if one had some mud in a tin pail, and forced down the lid with such pressure that the can sprung a dozen leaks, or it is as if one had the mud in a linen bag and squeezed; merely as

mechanics (not counting that one has all the known and unknown chemical elements cooling simultaneously), but merely as mechanics this contraction gives energy enough to squeeze vegetation through the pores of the imaginary linen and to detach certain particles, leaving them still a momentum. A body should cool with decreasing speed in measure as it approaches the temperature of its surroundings; however, the earth is still, I think, supposed to be warmer than the surrounding unknown, and is presumably still cooling, or at any rate it is not proved that man is at the end of his physical changes. I return to horned gods and the halo in a few paragraphs. It is not proved that even the sort of impetus provided by a shrinking of planetary surface is denied one.

What is known is that man's great divergence has been in the making of detached, resumable tools.

That is to say, if an insect carries a saw, it carries it all the time. The "next step," as in the case of the male organ of the nautilus, is to grow a tool and detach it.

Man's first inventions are fire and the club, that is to say he detaches his digestion, he finds a means to get heat without releasing the calories of the log by internal combustion inside his own stomach. The invention of the first tool turned his mind (using this term in the full sense); turned, let us say, his "brain" from his own body. No need for greater antennæ, a fifth arm, etc., except, after a lapse, as a tour de force, to show that he is still lord of his body.

That is to say the langouste's long feelers, all sorts of extravagances in nature may be taken as the result of a

The new faculty? Without then the ostentation of an organ. Will? The hypnotist has shown the vanity and Blake the inutility of willing trifles, and black magic its futility. The telepathic faculty? In the first place is it new? Have not travellers always told cock and bull stories about its existence in savage Africa? Is it not a faculty that man has given up, if not as useless, at any rate as of a very limited use, a distraction, more bother than it is worth? Lacking a localizing sense, the savage knowing, if he does, what happens "somewhere" else, but never knowing quite where. The faculty was perhaps not worth the damage it does to concentration of mind on some useful subject. "Instinct preserves the useful gestures."

Take it that what man wants is a capacity for clearer understanding, or for physical refreshment and vigour, are not these precisely the faculties he is forever hammering at, perhaps stupidly? Muscularly he goes slowly, athletic records being constantly worn down by millimetres and seconds.

I appear to have thrown down bits of my note somewhat at random; let me return to physiology. People were long ignorant of the circulation of the blood; that known, they appeared to think the nerves stationary; Gourmont speaks of "circulation nerveuse," but many people still consider the nerve as at most a telegraph wire, simply because it does not bleed visibly when cut. The current is "interrupted." The school books of twenty years ago were rather vague about lymph, and various glands still baffle physicians. I have not seen the suggestion that some of them may serve rather as fuses

in an electric system, to prevent short circuits, or in some variant or allotropic form. The spermatozoide is, I take it, regarded as a sort of quintessence; the brain is also a quintessence, or at least "in rapport with" all parts of the body; the single spermatozoide demands simply that the ovule shall construct a human being, the suspended spermatozoide (if my wild shot rings the target bell) is ready to dispense with, in the literal sense, incarnation, en-fleshment. Shall we postulate the mass of spermatozoides, first accumulated in suspense, then specialized?

Three channels, hell, purgatory, heaven, if one wants to follow yet another terminology: digestive excretion, incarnation, freedom in the imagination, i.e., cast into an exterior formlessness, or into form material, or merely imaginative visually or perhaps musically or perhaps *fixed* in some other sensuous dimension, even of taste or odour (there have been perhaps creative cooks and perfumers?).

The dead laborious compilation and comparison of other men's dead images, all this is mere labour, not the spermatozoic act of the brain.

Woman, the conservator, the inheritor of past gestures, clever, practical, as Gourmont says, not inventive, always the best disciple of any inventor, has been always the enemy of the dead or laborious form of compilation, abstraction.

Not considering the process ended; taking the individual genius as the man in whom the new access, the new superfluity of spermatozoic pressure (quantitative and qualitative) up-shoots into the brain, alluvial Nile-

flood, bringing new crops, new invention. And as Gourmont says, there is only reasoning where there is initial error, i.e., weakness of the spurt, wandering search.

In no case can it be a question of mere animal quantity of sperm. You have the man who wears himself out and weakens his brain, echo of the orang, obviously not the talented sieve; you have the contrasted case in the type of man who really can not work until he has relieved the pressure on his spermatic canals.

This is a question of physiology, it is not a question of morals and sociology. Given the spermatozoic thought, the two great seas of fecundative matter, the brain lobes, mutually magnetized, luminous in their own knowledge of their being; whether they may be expected to seek exterior "luxuria," or whether they are going to repeat Augustine hymns, is not in my jurisdiction. An exterior paradise might not allure them "La bêtise humaine est la seule chose qui donne une idée de l'infini," says Renan, and Gourmont has quoted him, and all flesh is grass, a superior grass.

It remains that man has for centuries nibbled at this idea of connection, intimate connection between his sperm and his cerebration, the ascetic has tried to withhold all his sperm, the lure, the ignis fatuus perhaps, of wanting to super-think; the dope-fiend has tried opium and every inferior to Bacchus, to get an extra kick out of the organ, the mystics have sought the gleam in the tavern, Helen of Tyre, priestesses in the temple of Venus, in Indian temples, stray priestesses in the streets, un-uprootable custom, and probably with a basis of sanity. A sense of balance might show that asceticism means either a

drought or a crowding. The liquid solution must be kept at right consistency; one would say the due proportion of liquid to viscous particles, a good circulation; the actual quality of the sieve or separator, counting perhaps most of all; the balance of ejector and retentive media.

Perhaps the clue is in Propertius after all:

Ingenium nobis ipsa puella fecit.

There is the whole of the XIIth century love cult, and Dante's metaphysics a little to one side, and Gourmont's Latin Mystique; and for image-making both Fenollosa on "The Chinese Written Character," and the paragraphs in "Le Problème du Style." At any rate the quarrel between cerebralist and viveur and ignorantist ends, if the brain is thus conceived not as a separate and desiccated organ, but as the very fluid of life itself.

EZRA POUND

June 21, 1921.

THE NATURAL

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